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SOME SUGGESTIONS ON THE RESPECTIVE SPHERES OF SCIENCE AND PHILOSOPHY

I. IN WHICH PHILOSOPHY IS DECLARED INDEPENDENT OF SCIENCE

WITH the rise of modern science a new problem has arisen for philosophy. How is philosophy to be classified among the other forms of knowledge? To many of our contemporaries, of course, this is no problem at all; science is the only form of knowledge; therefore, there is no need to classify philosophy. Accordingly, what for the philosopher was originally a somewhat academic question of classification has now become a vital question involving the very existence of philosophy itself. It is this vital question which we wish to consider in this paper, our purpose being to show not only that philosophy is independent of science, but also in what sense it is independent.

At the outset we might call attention to a distinction between science and philosophy which has behind it something of the authority of commonsense usage. The scientist, it is said, strives for knowledge; the philosopher, for wisdom. Indeed, it is almost a truism today that while we may know far more than the

ancients, we are anything but far wiser than they. Our science has made great strides in the last several centuries. Has our philosophy progressed likewise?

For all of its plausibility this mere commonsense distinction between wisdom and knowledge can hardly be regarded as adequate evidence of the independence of philosophy from science. After all, what is wisdom? It is surely knowledge of a kind. Just how is that kind of knowledge which is wisdom to be differentiated from that kind of knowledge which is science?

Perhaps we can differentiate them by saying that philosophical knowledge is rational, while scientific knowledge is empirical. With the one are to be associated methods that are *a priori* and deductive; with the other, methods that are *a posteriori* and inductive. But this will not do. Philosophy simply is not to be identified with Rationalism. This may have been done in the seventeenth century, but since that time too much water has gone under the bridge for us ever to try to do it again. Besides, so far as science is concerned, it is no more exclusively empirical than philosophy is exclusively rational. To be sure, science is empirical. Yet for all its empiricism, science is not for that reason non-intellectual and non-rational. Quite the contrary, the old superstition is now dispelled which says that the task of the scientist is merely to observe with his senses. In fact, if there should be found a scientist who still insists that all he does is to observe, we might quickly silence him by asking if that means that what he never does is to think. No, mere sensory observation is inadequate and incomplete, for so long as sense data are given but not understood, real knowledge has not been attained. Accordingly, it is one of the most striking features of the history of science that empirical observation is always supplemented by attempts at intellectual explanation. Consider the classic example of Kepler. As a result of his own and others' empirical observations, he established the law that the planets move in elliptical orbits. Here was a fact; it was simply so, and empirical observations proved it. Yet physicists and astronomers were not content with it as such. They insisted upon having an explanation of it; they

wanted to know why planets should behave in this way. Aristotle's physics could give no accounting of it. As for Kepler himself he was hardly more successful, his suggestion being that there was an angel attached to each planet which guided the planet in its elliptical course. Indeed, it was not until Newton proposed his laws of motion that anything like a real explanation was forthcoming.

In other words, it would seem that a scientist is not content with the mere empirical knowledge that a thing is so; he requires also a rational understanding of why it is so. Perhaps, in the final analysis it is true that the scientist must be content with the "how" and cannot hope to attain the "why" of things. Nevertheless, up to a point and relatively, the scientist does seek to explain and to understand or, in other words, to know the "why" of things. Thus it is that hypotheses play the role that they do in sciences. For it is through hypotheses that what is empirically observed becomes rationally understood—at least relatively. Einstein's hypothesis was designed to account for the newly discovered data in the physical world, the evolutionary hypothesis for data of biology and geology, and so on with all the other hypotheses that are the stock in trade of every kind and variety of scientist.

Moreover, as regards the notion that the method of science is purely inductive, that is easily disposed of. For one thing such a relation as that existing between hypothesis and data is by no means a merely inductive one. On the contrary, the significance of the hypothesis lies in the fact that the data can be regarded as following from it, or as being deducible from it. Indeed, it is only to the extent that there is deduction from a hypothesis that there is explanation by a hypothesis. And more generally, a careful analysis of the factors involved in the respective processes of induction and deduction certainly indicates that although there may be a real distinction between the two, there certainly is no separation between them. In fact, it may be taken as a reliable maxim that there is no deduction without induction, and no induction without deduction.

With this the conclusion is inescapable: the empiricism of

science cannot be considered as being a radical empiricism which excludes all rational reflection and intellectual insight. Nor must we forget our previous conclusion to the effect that the rationalism of philosophy is not to be identified with that sort of seventeenth century Rationalism which vigorously denies any authority to empirical, *a posteriori* evidence. Unfortunately, if such be our conclusions, we would seem to be more than ever baffled in our attempt to distinguish between the kind of knowledge that is philosophical and the kind of knowledge that is scientific. After all, if neither science is exclusively empirical nor philosophy exclusively rational, there would seem to be no hope of enforcing upon the two disciplines a requirement of *suum cuique*. Instead, the methods of both would seem to be pretty much the same.

Still we must not be overhasty. It may turn out that even though both science and philosophy are empirical, it is to a fundamentally different kind of experience that each appeals. Not only that, but in the light of this possible difference in method, we may further discover a fundamental difference in object. At any rate, let us see if anything can be done towards drawing a distinction between the kind of experience the scientist appeals to and the kind the philosopher appeals to. A quotation from Santayana will clarify the issue:

> There is one point, indeed, in which I am truly sorry not to be able to profit by the guidance of my contemporaries. There is now a great ferment in natural and mathematical philosophy, and the times seem ripe for a new system of nature, at once ingenious and comprehensive, such as has not appeared since the earlier days of Greece. But what exists today is so tentative, obscure and confused by bad philosophy, that there is no knowing what parts may be sound and what parts merely personal and scatter-brained. If I were a mathematician I should no doubt regale myself, if not the reader with an electric or logistic system of the universe expressed in algebraic symbols. For good or ill, I am an ignorant man, almost a poet, and I can only spread a feast of what everybody knows. Fortunately exact science and the books of the learned are not necessary to establish my essential doctrine, nor can any of them claim a higher warrant than it has in itself; for it rests on public experience. It needs, to prove it, only the stars, the seasons, the

swarm of animals, the spectacle of birth and death, of cities and wars. My philosophy is justified, and has been justified in all ages and countries, by the facts before every man's eyes; and no great wit is required to discover it, only (what is rarer than wit) candour and courage. Learning does not liberate men from superstition when their souls are cowed or perplexed; and, without learning, clear eyes and honest reflection can discern the hang of the world and distinguish the edge of truth from the might of imagination. In the past or in the future, my language and my borrowed knowledge would have been different, but under whatever sky I had been born, since it is the same sky, I should have the same philosophy.[1]

This passage from Santayana might well serve as philosophy's declaration of independence from science. Moreover, of interest in the quotation are not merely the reasons Santayana does give for philosophy's right to independence, but also the reasons he does not give. He does not maintain that philosophy is distinguishable from science because it finds its evidence in pure reason rather than in experience. Quite the contrary, he maintains that it is precisely in experience that the philosopher does find his evidence. And yet the experience that the philosopher relies upon is not the same kind of experience that the scientist relies upon. Instead, it is what Santayana calls a public experience; it is an experience that has been common to all men in all times and in all climes; it is the kind of experience that makes possible the " spreading of a feast of what everybody knows."

With such an experience contrast the sort of empirical evidence that the scientist bases his conclusions upon. It is not evidence that all men are familiar with. Nor is it material for a feast of what everybody knows. Rather it is the private property of those who can use microscopes and telescopes, who can handle charts and graphs, and who can find their way around in laboratories and on field trips. Thus it is that on the basis of Santayana's remarks we may state that the real difference between philosophy and science lies in the fact that

[1] George Santyana, *Skepticism and Animal Faith* (New York: 1923), pp. ix-x. (With the permission of Charles Scribner's Sons.)

the one uses a so-called common experience, while the other uses a special experience.[2]

No sooner have we laid down this distinction between science and philosophy, than we have laid ourselves open to an obvious criticism. We shall be reminded that however much the distinction between common and special experience may serve to differentiate philosophy from science, it serves equally to degrade philosophy by comparison with science. For common experience is by definition an experience which is crude and unrefined. Accordingly, it is argued that because common experience is crude and unrefined, it is inadequate. Because it is inadequate, science has long since discarded it in favour of a source of material which is more inaccessible, to be sure, but which is richer and more fruitful, none the less. Thus Dr. Franz Alexander criticizes Professor Adler:

> Mr. Adler reduces philosophy to reasoning about inadequate (common sense) observations, science representing at the same time reasoning about more adequate observations obtained by refined and improved methods of investigation . . . . . If Adler's definition of philosophy is correct, philosophy should be discarded in the proportion to which scientific knowledge progresses by the use of steadily improving techniques of investigations.[3]

Accordingly, if these criticisms of common experience are sound, then the philosopher, whose distinction is that he relies upon common experience, must face a most embarrassing dilemma. Either he is hopelessly behind the times for the reason that he is working on material that the scientist has long ago exhausted and discarded; or he is hopelessly ahead of the times for the reason that he is trying to solve problems which only the scientist can solve, but which the present state of our data and material does not yet permit us to solve.

There is however an answer to this criticism of common experience. The answer is that the criticism contains a *non-*

[2] This distinction between common and special experience is, of course, the one that Mr. Adler has so vigorously and persuasively argued for.

[3] Mortimer J. Adler, *What Man Has Made of Man* (New York : 1937), preface by Dr. Franz Alexander, p. xii. (With the permission of Longman's Green & Co.)

sequitur. For how does the argument run? It says that the trouble with common experience is that, as experience, there is not enough of it. It is unrefined, inadequate, and incomplete. What is needed are more test tubes, microscopes, and precision instruments. With these it will be possible to gather more information. With this added information, light will be thrown upon the various unsolved problems of existence which as yet have been only toyed with in philosophical speculation, but which must eventually be solved through scientific investigation.

Such an argument, however, is fallacious; the evidence as stated is sound, but it is not evidence of the conclusion drawn. Common experience is, from a certain point of view, experience that is crude and insufficient; that is true enough. It is also true that with the acquisition of more delicate instruments of observation men will be able to gather more information. But more information about what? Here is just where Dr. Alexander's criticism begs the question. He says that it will be more information about these fundamental and yet unsolved problems of existence which have so long occupied the attention of the philosophers. But we say that it will be more information about no such thing at all. Such added information as the scientist acquires will be added information about the field of science, but not at all about the field of philosophy. Likewise, the same answer may be made to the charge that the philosopher bases his speculations upon an experience that is crude and insufficient. Any philosopher must admit that his common experience would certainly be crude and insufficient for puposes of science, but this does not necessarily prove that it is crude and insufficient for purposes of philosophy. Accordingly, any criticisms of philosophy on this score do little more than beg the question.

Moreover, there is something very interesting about this defense of common experience as an adequate basis for philosophy. It is interesting because it incidentally brings to light another ground of distinction between science and philosophy. Not only do these two differ in method, but now we can perhaps begin to see how they differ in object also. Thus we spoke of the field of philosophy and the field of science, and we said that

what may be very informative about the one, will not necessarily be informative about the other. This is like saying that what is very important to know when you are building a house, may well be of very little importance when you are making a dress. In other words, the world of philosophy is as different from the world of science as the world of housebuilding from the world of dressmaking.

More particularly, when we say that the scientist is concerned about one sort of thing and the philosopher about another sort of thing, what sort of thing do we mean? Well, there is in the history of philosophy the familiar distinction between the world of phenomena and appearances on the one hand, and the world of noumena and real existences on the other. Why may we not appropriate this ancient distinction in order to make clear the difference in object between science and philosophy? If we want to know, then, why science requires such a quantity and variety of data, it is because the field of science is the field of sensory appearances. Similarly, if we want to know why philosophy requires nothing like so extensive or so refined an experience as science, it is because philosophy is not concerned with the world of phenomena and empirically observable events.

Before we pursue any further this suggestion of a difference in object between science and philosophy, let us return once more to a consideration of the difference in method, and let us trace some of its consequences. The most important consequence is that if common experience really does suffice for purposes of philosophy, then philosophy is in no wise dependent upon special experience. If it is not dependent upon special experience, it is not dependent upon science. That is to say, the philosopher simply does not have to fuss and fret about keeping up with the Joneses of science. The reason for this is that all the advances in science result from new discoveries; and these new discoveries, by the very fact that they are new, do not represent an experience that is common to all men in all ages, but rather an experience that is peculiar to only a few research workers and special investigators in our own age. Moreover, there is a corollary to this. If philosophic truth, in

order to be acquired, need not wait for progress in science, so also it must be acknowledged that philosophic truth, once it is acquired, need not fear that it will ever be upset by future developments in science.

Apparently, then, philosophy must no longer be looked upon as a mere poor relation hanging on the coattails of science. It is a distinct and independent personality with an object and method of its own.

II. In Which Philosophy is Likened to Mathematics in Order to be Contrasted With Science

Such is philosophy's declaration of independence from science. Unfortunately, in making the declaration, it may be thought that we have asserted things that are both extreme and contradictory. As an example of our extreme statements may be cited those assertions to the effect that the philosopher need pay no heed to the results of science, and that once a philosophic judgment is established, no possible scientific discovery can ever upset it. This surely is so extreme as to reduce our position almost to an absurdity. As an example of our contradictory assertions may be cited our statement to the effect that philosophy is concerned with the noumenal and intelligible world. Now this is clearly incompatible with our earlier insistence that philosophy is not to be identified with Rationalism, and that the method of philosophy is undeniably empirical.

However, it will not be difficult both to lessen these extremities and to resolve the contradictions. The former we shall attempt by showing that philosophic judgments are *a priori* and, for this reason, immune to either confirmation or refutation by future experience. The latter we shall attempt by showing that although the propositions of philosophy are *a priori*, they are not for that reason innate; consequently, there is a very definite sense in which they may be said to be derived from experience.

In order to accomplish these ends, we shall make a comparison between philosophy and mathematics. The ground for the

comparison lies in the fact that in both philosophy and mathematics the judgments are *a priori*. That is to say, they are universal and necessary; they represent what must be so and cannot be otherwise; they are such that their opposites are inconceivable. For instance, let us consider a few illustrations of such *a priori* propositions borrowed from mathematics and logic. Thus we are told that it is inconceivable that a Euclidean triangle should not have its angles equal to two right angles, or that a and b should not be greater than a. Similarly, we know that it is inconceivable that a conclusion should be drawn from two negative premises, or that an attribute should both be predicable of a subject and not predicable of that subject at one and the same time and in the same respect. Here we have propositions that are truly *a priori*, truly universal and necessary.

Now with such propositions, contrast these: "There are ninety-two elements in the atomic table." "In all living organisms ontogeny recapitulates phylogeny." Here we have propositions which perhaps are true, but which differ from those which preceded in that they do not have the same kind, or at least not the same degree, of universality and necessity. Of the one sort of proposition the opposite is inconceivable; of the other sort the opposite is perfectly conceivable, even though that opposite may in fact be false. Thus there is nothing inconceivable about there being either more or less than ninety-two elements. So far as we know, there are in fact just ninety-two of them, but the number, for all we can see, might have been two or a hundred and two. Similarly, with the biological principle, there is nothing about the nature of a living organism as such that would seem to necessitate its having this peculiar property of retracing in its own development the development of the race. In this regard, the relation of a living organism to its property of ontogeny recapitulating phylogeny, and the relation of a Euclidean triangle to its property of having its angles equal to two right angles are as different as day and night.

Furthermore, we say that future experience is relevant to such laws of chemistry and biology as we have just considered,

but it is in no wise relevant to the mathematical and logical principles just considered. Thus as regards the ninety-two elements, there may well come a day when some additional elements may be discovered, or when some of the ninety-two already discovered may be reduced to others, thus lessening the total number. Never will there come a day when some future experience will reveal that in the realm of quantity a and b is not greater than a. In other words, so far as the propositions of mathematics and logic are concerned, they need neither hope for confirmation nor dread of refutation by future experience. It is in this sense that they are *a priori*.

Nevertheless, to be *a priori* does not mean to be innate, whatever the Platonic, Augustinian, Cartesian tradition may insist to the contrary. We are not born with any knowledge of logic, mathematics, or metaphysics. Rather we learn of these things, as we learn of all things, through experience. The child comes to know that a straight line is the shortest distance between two points as a result of many pleasant discoveries, such as, how much shorter it is to cut across a lawn than to go around it. As for a and b being greater than a, it does not take him long to realize this, considering how early he begins to persuade his parents that to have both his toys and a piece of candy is really much better than having just his toys. In other words, no matter what the purity of our *a priori* knowledge may be, it is still from experience that we derive it.

Nevertheless, the derivation is peculiar; it is psychological, not logical. That is to say, the experience from which an *a priori* principle is derived is in no sense evidence of the truth of the principle; rather it is only a stimulus which provokes an insight into the truth of the principle. In fact, it is like Newton and the apple; the apple fell on Newton's head, and lo, the theory of gravitation resulted. Now, had the apple not fallen, the theory of gravitation might never have occurred to Newton. That is hardly to be taken to mean that the falling of an apple on the great man's head is a necessary step in the demonstration of the theory of gravitation. Imagine opening the *Principa* and reading: "First go out into an orchard and wait until

an apple falls on your head." Such an axiom would doubtless make the Newtonian theory much more understandable to those of us who are mathematically ignorant; but, beyond this, its advantages would, it seems, be negligible.

Now, what the falling apple was to the theory of graviation, that experience is to *a priori* propositions; it is what makes us think of them; it is not what convinces us of their truth and validity. Accordingly, it is in this sense that we say that in mathematics, logic, and philosophy, empirical observation is psychologically rather than logically relevant. Also it is in this sense that mathematical, logical, and philosophical knowledge may be said to be *a priori* but not innate.

Contrast knowledge in the natural sciences. Like mathematical, logical, and philosophical knowledge, it is not innate; but unlike them, it is not and can never be *a priori*. Moreover, because it can never become *a priori* knowledge, experience is essential to it, not accidental; that is to say, empirical observations are logically relevant, not just psychologically relevant, to the attainment of scientific knowledge. As evidence of this, consider the examples which we have already given of scientific judgments. " There are ninety-two elements." " In all living organisms ontogeny recapitulates phylogeny." Of such propositions the opposites are in no wise inconceivable. There is nothing in the nature of their subjects which would necessitate their having such properties. This much has already been shown. But if the properties and characteristics of things in the natural world cannot be inferred from a consideration of the nature of those things themselves, then what can they be inferred from ? The answer is, " From experience."

Why there should be only ninety-two elements, we do not know. That there are only ninety-two elements, we learn from experience. Why in living organisms ontogeny should recapitulate phylogeny, we don't know. That it does so, however, we are assured by experience. In other words, not being able to understand the " why " of things in the natural order, experience would seem to be the next best thing in that it teaches us the " how " of things. Since anything like a real understanding or

insight into the processes of nature is denied us, it is experience that is brought forward and used as a sort of stop-gap against the floods of total ignorance. Thus, in natural science, experience, instead of being a mere stimulus to an *a priori* insight into universal and necessary truths, is rather a substitute for a knowledge of such truths. Moreover, it is as genuine evidence and as an essential part of demonstration that experience functions in the natural sciences; it is logically and not just psychologically relevant to the attainment of truth.

Are we, then, to infer from this that in the natural sciences sensation displaces reason? After all, we have said that empirical observation serves as a substitute for intellectual insight. Is there not but one conclusion to be drawn from this? Scientific evidence is empirical; hence any such thing as rational evidence can be simply dispensed with in the investigations of nature.

Such a conclusion, however, would be extreme. Indeed, it would be in actual conflict with what we have already most vigorously insisted upon. It was pointed out that just as philosophy requires experience, so also science requires reason, and yet this position demanded some qualification. In fact, we have already qualified it so far as philosophy is concerned; we have indicated in just what sense philosophy stands in need of experience. Apparently, then, we must now indicate in just what sense science stands in need for reason. That it does stand in need of it is obvious. Consider even the simplest empirical judgments: "This white thing before me is a sheet of paper"; "This green thing in my hand is a fountain pen." Already in these apparently simple statements of fact the mere sense data have been transcended. To use the old-fashioned expression, they have been subsumed under a universal. To use a more modern expression, they have been put into a certain context, a context which makes possible their being linked and associated with other possible data.

For example, if this really is a fountain pen in my hand, then it will have a point that is sharp to the touch; its holder will be round and smooth, except where it is threaded for the

cap; it will have a certain hardness and yet will be hollow inside. These and any number of other sensible properties will attach to this object, if it is a fountain pen. In other words, the purpose of subsuming a datum under a universal or of putting it into a context is simply to fit it into the natural order of things. It is just this fitting of a datum into its proper place in the order of things that cannot be achieved by sensation alone; it is a task which only the reason can accomplish. In fact, were it not for the intellect and its power to generalize, the mere sense data themselves would be meaningless and insignificant.

This interdependence of reason and experience in science can be illustrated in another way—in a way we have already used. It may be remembered that once before when we sought to show that the empiricism of science was not exclusive of the use of reason and intellect, we pointed out how scientists are constantly resorting to hypotheses. Thus it may often appear to be established empirically that things happen in a certain way (e. g., that the planets move in elliptical orbits). But this does not satisfy the man of science. He seeks a hypothesis that will explain their happening that way (e. g., Newton's hypotheses in the form of laws of motion). In other words, there would seem to be in the natural sciences a sort of upward and downward path, upward from the data to the hypotheses and downward from the hypotheses to the data again. These two paths, however, are traced by reason, not by sensation. Thus once more we find reason supplementing sense in such a way as to make the mere brute data meaningful and significant.

Indeed, this business of subsuming a particular datum under a universal concept and this business of explaining an empirical correlation by means of a hypothesis are not radically distinct. Instead, they both represent the construction of hypotheses in order to account for something. Thus even the fitting of a datum into its context represents the employment of a hypothesis for purposes of explanation, for the context itself is a sort of hypothesis. Consider the data of greenness and smoothness and rectangular shape; these do not necessarily and universally

imply a fountain pen. Nevertheless, to say that they are a fountain pen does explain them and make them intelligible. Of course, there is always the possibility of error. It may be that the greenness and smoothness and rectangular shape are those of a pencil rather than of a fountain pen. We were deceived as a result of too hasty a glance, and it is through further examination that the mistake becomes apparent. Yet, right here we see the peculiar virtue of hypothesis. Even though it may be a false one, still it enables us to get hold of our data and manipulate them so as to set then in relation to other data. In this way future observations become relevant either as confirmations or as "infirmations"[4] of what we had supposed the original data to be. Hypotheses are thus indispensable to a knowledge of the empirical world; yet hypotheses are the creatures of reason, not of sense.

Now we are ready to summarize our arguments and draw our conclusions as to the precise nature of the contrast between science and philosophy. Neither is exclusively rational; neither is exclusively empirical; and yet for all that, the two do not follow identical methods of investigation. Thus philosophy depends upon experience, and yet in a different way from the way in which science does. So also science stands in need of the activity of the intellect, and yet in a different way from the way in which philosophy does. In fact, we might almost say that in philosophy experience is but a means to the end of intellectual insight, whereas in science the activity of the intellect serves merely to set the stage for further empirical observations. Thus, as we have seen, for the philosopher, as for the mathematician, experience serves only as a stimulus; it is but psychologically, not logically, relevant to an intellectual insight into *a priori* truths. On the other hand, for the scientist the intellect serves but to fashion hypotheses; and of these hypotheses the sole function is to point back to the world of experience, and thus make possible new experiences. Consequently, whatever may be said of the importance of experience

[4] For this usage, see Eaton, *General Logic*, page 545.

to philosophy and of reason to science, it still remains true that the ultimate arbiter and authority for philosophy is the intellect and for science the senses.

These latest conclusions we can now use to reinforce some of our earlier ones. Consider, for instance, our earlier conclusion that common experience is adequate for philosophy, whereas only special experience suffices for science. We insisted that this was so, and we answered objections stating that it was not so. Yet we never stopped to explain why it was so. Why should philosophy be able to get along on common experience, while science requires special experience? The answer to this question "why" is now clear from what we know of the nature of scientific knowledge and the nature of philosophical knowledge. For if observation is but a means to the end of intellectual insight, then only so much observation is needed as will stimulate such insight. Once this is accomplished, the senses, having rendered their services, may be paid off and discharged. On the other hand, where empirical evidence is the end rather than the means, sensory observation is never finished; it soon goes beyond the confines of common, everyday experience and plunges ever deeper and deeper into those perpetually new and uncharted reaches of experience that are opened up through refined and special techniques of experiment and investigation.

Moreover, there is another one of our earlier conclusions which we are now in position to reinforce. It was the conclusion that not only is the method of philosophy different from that of science, but also it is towards entirely different kinds of objects that the two activities are directed. Indeed, without this difference in object, the difference in method could hardly be sustained, for suppose we ask why common experience is sufficient for the philosopher? We have already answered that question: it is because for the philosopher experience is but a means to the end of intellectual insight. Suppose we then go on to ask why for philosophy intellectual insight is the end, whereas for science the end is empirical observation? The only answer is that philosophy, like mathematics, is concerned with the intelligible world, while science deals with the phenomenal

world. Were this not so, all of our previous contentions would become dubious. It would no longer be possible for the philosopher to rely on common experience which is so very crude compared to the data and materials of the scientist. It would be actually absurd for the philosopher to pretend to be in no fear of future empirical discoveries upsetting his conclusions. However, this latter ceases to be absurd and the former ceases to be impossible, as soon as it is clearly recognized that the philosopher is not seeking to know the structure of the sensible world at all, but only of the intelligible world. That it is the intelligible world, rather than the sensible world, with which the philosopher is concerned becomes clear, as soon as the likeness of philosophy to mathematics and the interest of philosophy in the *a priori* are definitely established.

III. In Which Some Empirical Objections Are Met and Answered

Philosophy has been classified with mathematics and differentiated from science. As a result, it has been possible to make clear the different ways in which philosophy and science rely upon experience, as well as the different worlds with which these two disciplines are concerned. Yet no sooner have we established these two points of difference, than we shall be told that our second point of difference, namely, the differentiation in object, is peculiarly suspect. For how can we blithely assert that philosophy is one thing, since it deals with the noumenal world, while science is another thing, since it deals with the phenomenal world? After all, suppose we ask ourselves why it is that so many of our contemporaries flatly refuse to grant philosophy any sort of respectable status independent of science. Is it not simply because the ancient myth of an intelligible world is thought to have been thoroughly deflated and debunked? What do we mean, then, trying to revive it in this post-Kantian era of enlightenment?

In short, the issue, as presented to us by our empirically minded contemporaries, would be simply this: how can we

appeal to the existence of a noumenal world as the source of philosophy's independence of science, when it was no less than the denial of the existence of any such world that has been responsible for the humiliation of philosophy and its reduction to a state of subjection to science? What we have said about the *a priori* character of mathematics, logic, and philosophy is all very well for mathematics and logic, but it will not do for philosophy. After all, mathematics and logic are not concerned with existence or with the real world of nature. They represent wholly arbitrary constructions of the mind. They are, as the moderns would say, purely "postulational" or, as Kant would say, purely analytic. Little wonder, then, that for them experience is only psychologically, and not logically, relevant. Little wonder that they need not submit themselves either to confirmation or refutation by experience. With philosophy it is a different matter. Philosophy does make assertions about existence, but assertions about existence can only be empirical. They can neither arise antecedently to experience nor maintain themselves independently of experience, once they have arisen. Every item of real knowledge, in fact, is traceable to experience and subject to revision by experience. Experience, in other words, is the be-all and end-all of knowledge—at least, such is the contention.

Once more we are up against an entrenched empiricism which simply denies any such thing as an intelligible world and bluntly challenges reason's right to pronounce upon the nature of things. Nor will it avail us to remind these empiricists that we are not defending any such thing as the old-fashioned pure reason, having explicitly rejected the Rationalist tenet of innate ideas. No, even that qualified rationalism which we have advocated, that rationalism which, though it insists that, ultimately, principles can be reached whose validity is in no wise dependent on sensation, nevertheless insists with equal vigor that all knowledge must have its origin and root in the evidence of the senses—even such rationalism would be rejected by our contemporary crop of empiricists. How, then, are they to be

answered? How can it be shown that there is such a thing as an intelligible world?

Unfortunately, we must begin our answering and our demonstrating by admitting that there is one group of empiricists whom we cannot answer, and for whom we cannot demonstrate—at least not in this paper. That is the group which right now would seem to be strutting and fretting its hour upon the philosophical stage. Their favorite lines are replete with words about meaningful and meaningless concepts, and when they pronounce them, they strike an air of complete assurance. They tell us that to talk about any thing that cannot be felt or touched or in any way sensed is simply to talk nonsense. Thus if you speak to them of an intelligible world, they blandly reply that they have no idea what you mean. If you try to explain, they will cut you short and say that you cannot possibly explain what you mean since you mean nothing. If you insist that you do mean something and that you can prove that you do, they will calmly assure you that you are talking nonsense. If you then appeal to the authority of the great philosophers and wise men of all ages and urge that these men use substantially the same concepts and notions as yourself, they will simply say that that is so much the worse for the sages and the philosophers; they were talking nonsense too. "It is no use to argue," they will say, "we have set up certain criteria of meaningfulness; now if anything fails to satisfy these criteria, even if it makes good sense to us, we will still know perfectly well that it is nonsense and will refuse to listen." Obviously, it is no use to argue with these empiricists. They will not be moved by either rhyme or reason, or, to use their own jargon, by either emotive meaning or sense meaning.

It is not, then, to this brand of empiricist that we will address our arguments; rather, it is to that more robust and old-fashioned breed who might be quite willing to admit that the notion of an intelligible world is understandable enough, but who would be equally insistent that, however understandable it is, it simply does not exist. As for there being such a thing as a real order of nature, an order that is independent of our knowledge

of it but that we nevertheless can know, at least partially, this is all just part and parcel of what our good old-fashioned empiricist takes for granted. In taking it for granted, he insists that this same order is an empirical order and can be known only through sensory experience. He will have none of this *a priori*, intelligible world stuff; that is a fiction; when you start talking about that sort of thing, you have ceased trying to know and have started to manufacture, and to manufacture mere cobwebs at that. No, if it is the real you want, the order of independent, stubborn facts, then stick to your sensory evidence and don't go wandering off into your *a priori* land of nod.

Such is the counsel of our hardheaded, red-blooded man of experience. Yet, let us look a little more closely at some of these things that are part and parcel of what he takes for granted. He says that there is a real order of nature, an order which we do not create but which we know. What about this judgment that there is a reality, that something is real? Is this an empirical judgment in the ordinary sense?

Well, why not call it empirical, if we suppose that it is our senses that bring us up against real, existing beings? We will grant that it is they who jolt us out of a mere idle contemplation of essences and into an honest confrontation of existences. Very well, then, the content of this judgment which we are considering certainly belongs to the order of facts and not to the mere order of logic. For what is this judgment other than the declaration that there is just such an order of facts; there is an order of nature; there is reality, being, and existence? We have here, most assuredly, a judgment about existence, an empirical judgment, if you like. Consider it for a moment. Compare it with other characteristically empirical judgments: "There are ninety-two elements." "There is evolution in nature." "Ours is an Einsteinian universe." At once, we see the difference. These latter judgments are in no sense inviolate. They are subject to revision and rejection, according to what future experience reveals, but not so the judgment that there exists something, that there is a real existence. Now can one

deny or challenge the existence of being? How can one say that nothing is? Is not one's very denial of reality based upon a certain conception of reality? After all, one must ground one's denial somehow; and what other possible ground can one give than the very nature of things, the very order of reality itself? Any such appeal to the nature of things or to the order of reality presupposes that there are things and that there is a reality. Put abstractly the point is this: the denial that being is must be based on a certain notion of what being is, but with any notion of what being is there is the notion that being is. In other words, even though it may be possible to doubt whether reality is this or that, it is altogether impossible to doubt whether reality is or is not.

What, then, are we to conclude from all this in regard to the existence of an *a priori* and of an intelligible world? Well, even if we admit that the judgment that there is being is not *a priori* but empirical, still it must also be admitted by our empiricist opponent that this same judgment does not have many of the characteristics which are usually attributed to empirical judgments. There is nothing tentative or hypothetical about it. On the contrary, it is certain, and its truth is known to be absolutely immune to any sort of correction from future experience. This, however, would seem to answer precisely to the description which we previously gave of such modified *a priori*, intelligible principles as were to serve as a foundation for philosophy. At least, then, we would seem to have found a truly philosophical judgment, founded on common experience and yet transcendent of experience, in the sense that once it is established it has no need of submitting itself to further verification in experience.

Before we can gloat too much over having turned the tables on the good old-fashioned empiricist, we must listen to the defense prepared in his behalf. For it might be urged that he of all people would not imagine that experience could ever disclose the fact that there was no being and no existence. On the contrary, his honest empiricist's doubts would not extend to questioning the being of being, but only to questioning

the essence of being. That being is, is a proposition he would not challenge, but that being is this rather than that—or to put it into language more familiar and pleasing to him, that the order of nature is of this sort rather than that—is a proposition that cannot be known *a priori* and antecedently to all experience. Not only that, but even after experience has intervened, there can be no hope that the matter will be settled once and for all. Rather, the process of appealing to experience must continue. Thus, once experience has suggested a theory as to what the order of nature is, that theory must be verified and possibly modified by further experience. Then these modifications in turn must be verified and still further modified, and so on *ad infinitum*.

Such a defense, however, is not sound. For its foundation it claims the distinction between the fact of existence and the nature of existence. However, to draw such a distinction by no means establishes the contention that it is for the philosopher to discover only the fact of existence, while it is for the scientist to pronounce upon the nature of existence. On the contrary, we have already seen for ourselves how the philosophic judgment that there is being leads directly and immediately to other philosophic judgments about the nature of being. For did we not show that this very empirical judgment which asserts that there is existence is different from other empirical judgments, and that its difference lies primarily in the fact that it can never be upset by future experience? What is it that makes it thus inviolate? Must it not be the peculiar nature of its subject matter? And what is it subject matter? Being. In other words, no sooner did we discover that there is being and reality, than we realized that being is of such a nature as to make this proposition immune to any sort of refutation. A knowledge of the "that" leads over at once into a knowledge of the "what," and a knowledge of existence into a knowledge of essence.

Nor would the empiricist be able to rejoin that for the philosopher to ascertain only a single item in the essence of being is not much of an achievement, particularly since all the

remaining work of determining the nature of things lies within the competence of the empirical scientist. Quite the contrary, with the ascertainment of this one item in the nature of being, any number of other items immediately come into view. What about this very distinction between existence and essence? Originally the empiricist himself appealed to it, and subsequently we ourselves considered and discussed it. Is this distinction a scientific one? Is it merely empirical? Hardly, since, far from being a distinction which is simply a datum of sense, it is rather a distinction which is presupposed in any understanding of the data of sense. For how could one possibly consider or talk about the materials gathered from empirical observation without considering them under these two aspects or moments: they are, and they are something? Nor is this distinction between essence and existence comparable to scientific judgments insofar as these latter are tentative and subject to discard. Rather, it is absolutely necessary for us to conceive of being under these two aspects of existence and essence. If one supposes that it is not necessary, let him try to conceive the opposite. By his very act of conception, he refutes himself.

This sort of polarity of essence and existence is not the only thing which is implied by the very notion of being itself. There are also other assertions about the nature of being which the philosopher can make with perfect legitimacy. Admitting that something exists, can we help admitting at the same time that whatever exists does exist, and that insofar as it exists and is something, it does not not exist and is not nothing? Surely these judgments cannot be denied, for, as Aristotle showed long ago, in denying them one must presuppose them: each thing is what it is, and insofar as it is what it is, it is not something else. Once more we find ourselves in the presence of judgments which have nothing to anticipate or dread in future experience. Call them *a priori* if you like. The fact is that they are not like scientific judgments; they are not merely tentative; they do not depend upon the authority of empirical observation;

in short, the only thing to be said about them is that they are philosophical judgments.

All this would arouse in our old-fashioned empiricist nothing but contempt. He would reply: " Once more you drag out the old battered principles of identity and non-contradiction and hold them up as exhibits *A* and *B* of philosophical knowledge. Well, let us end the argument once and for all and admit that these principles do represent philosophical knowledge. Admitting that, what does it prove? It proves that philosophy is capable of what everyone has always admitted it to be capable of—a lot of cobweb spinning. For in virtue of the principles of identity and non-contradiction, one can construct a whole system of magnificently interwoven essences, and one can construct it all *a priori* too. Then when it is done, what does one have? Nothing but what one started out with—a lot of essences and no existence. No, if it is the real order of nature that you want to find, then you won't find it by building a lot of air castles on top of the principles of identity and non-contradiction. Instead, you will find it only by the slow and tedious process of gathering data, propounding hypotheses, and then going back to the data again for verification. Nor will anything ever be absolutely certain on the basis of such a method of procedure. Rather, everything will be merely tentative, and subject to revision by future experience."

Unfortunately, this reply evades the issue. Originally the defense proposed for the empiricist was that however much it might be within the philosopher's province to establish the being of being, he still could not show *a priori* what the essence of being must be. In reply to this, we suggested that it could be known *a priori* that the distinction between being and essence was relevant to the nature of being, and that the principles of identity and non-contradiction were certainly of the very essence of being. Now we did not say that any more could be known of the nature and character of being, but we did say that this much could be. Nor has anything that the empiricist said served to upset this contention.

Yet, if this is all that the philosopher can know of the essence

of being, and if everything else about reality falls within the province of the scientist to discover, then the philosopher's task is neither a very significant nor a very important one. However, this is not all that the philosopher can know. Nor is his further knowledge confined to mere essences, i. e., to a mere consideration of what might be as over against what actually is. On the contrary, the philosopher is able to know that certain essences are, that they exist. He knows, in other words, not just about natures, but about the nature of things; or, to put it still differently, he has knowledge not merely of essence but also of the essence of being, i. e., of the existence of essences.

To make this assertion carry conviction, let us return once more to the consideration of those points which we suggested were simply taken for granted by the ordinary empiricist. It will be remembered that the admission which we attributed to him was that there is a real, natural order of things, an order which men do not create but rather know. Involved in this admission is the judgment that there is being, that something really exists. Already we have shown how this judgment as to the fact of being is not a scientific judgment at all; and we have also shown how, close upon the heels of this judgment about the fact of existence, there follows a whole crowd of judgments regarding the nature and essence of being, which judgments are likewise in no way scientific. But the judgment that there is being is not the only judgment which is involved in the initial admission of the empiricist. There is also the judgment that there is knowledge. Besides, if one is going so far as to admit that there is a natural order of things, then one must certainly accede to the judgments that there are things, that these things are many, and that these many things are subject to change and becoming.

Once more we have certain judgments of fact comparable to the judgment that there is being. Suppose we ask what their basis and origin are. Are they scientific judgments? Are they *a priori*? Or just what is their nature? Certainly they cannot be *a priori*, since there is nothing about the nature of reality

considered abstractly, and as such, that would necessitate the existence of multiplicity, change, and knowledge. Yet there is no doubt of their certainty. For how can one deny that there is knowledge? To do so would be but to recommit the age-old fallacy of the sceptic who professes to have knowledge that there is no knowledge.

Similarly, would one be any more likely to challenge the existence of multiplicity and change? Hardly; for, to borrow Plato's phrase, we may confidently assert that our father, Parmenides, has long since had violent hands laid upon him, and to come to his defense now would be to involve oneself in self-contradiction. For if there is no multiplicity, what of the opinion that there is? Does this not imply a difference between truth and illusion? Similarly, if there is no change, what may be said of the change from an ignorance of this truth to a knowledge of it ?

Thus once again, we find ourselves in the presence of truths which, if not purely *a priori*, at least are not scientific judgments. For there is no tentativeness about them. There is no chance of their being discredited. Consequently, they are not like judgments to the effect that there are ninety-two elements in the atomic table, or that there is a gravitation of bodies. Not only that, but once these judgments of fact are laid down, there follow upon them any number of necessary judgments concerning the nature and essence of the things thus established. Thus no sooner is it established that there is knowledge, than further reflection proceeds to reveal something of what knowledge is. Knowledge, we learn, necessarily involves both the distinction and the identification of the knower and the thing known. How can this be and in just what sense is it so? These are questions that we learn the answers to only through still further rational reflection concerning what it is that knowledge is. Likewise, no sooner is it established that there is change, than further reflection discloses something of the nature of change. For example, we come to see how there must be a something that undergoes the change as well as a something that instigates and effects the change. In other

words, any fact of change involves a " from," a " to," an " of," and a " by." Does anyone doubt this? How can one? There is no way of characterizing change without being caught up by the prepositions " from," " to," " of," and " by "; they are a part of the very logic of the situation.

You will retort: " All these prepositions are but indicative of the way we human beings use language and are in no sense indicative of the way things are." To which the reply is: " Human beings use language in that way because they think in that way, and they think in that way because that is the way things are. If one denies that thinking is thus in conformity with the order and nature of things, then one is denying that the order and nature of things can be known. But to profess to know that there can be no knowledge is self-contradictory, as we have already seen."

Once more we find ourselves in possession of judgments concerning the nature of things which are certainly not like scientific judgments. They are universal and necessary; they are certain, not tentative; and they require nothing from future experience, neither confirmation nor " infirmation." [5] In short, they are philosophic judgments.

How does it happen that there can be such philosophic judgments about the nature of knowledge, of essence, of existence, of change, etc.? That there are such judgments we have just seen. As to how there can be such judgments we perhaps do not yet see. However, is not the explanation to be found in the fact that there exists not only a phenomenal world knowable by the scientist, but also an intelligible world knowable by the philosopher? This is, indeed, an interesting conclusion, for it was no less than this very question as to whether there is an intelligible world or not that started us on the course of our arduous argument. Let us review briefly the issue as it then presented itself to us. What we had been trying to do for some time was to differentiate science from philosophy in terms of method. We had found that in general the methods of the two

[5] For this usage, see Eaton, *General Logic*, page 545.

were alike; both made use of empirical observation and intellectual investigation. Specifically, however, the methods were different: in the one case, that of science, rational reflection was used as a mere means to secure further empirical data; in the other case, that of philosophy, empirical observation was but a means to the end of intellectual insight.

Nevertheless, this difference in method between science and philosophy was not enough; it did not seem to be self-sufficient; it needed to be grounded upon a difference in object. What was this difference in object? It was the difference between the sensible world and the intelligible world, but no sooner had we reached this point in our discussion than the whole of our effort seemed to be rendered useless by the simple consideration that there was no such thing as an intelligible world. In fact, Kant denied the existence of any such thing, and most of our present-day empirically minded scientists would certainly agree with him. Not only that, but they would go further and would argue that since there could be no difference between the object of philosophy and the object of science, there could be no difference in method. If there could be no difference in method, what possible difference could there be of any kind? Presumably there could be none. But as soon as it becomes impossible to differentiate philosophy from science, the fate of philosophy is sealed, for in our day science is fixed and established. Accordingly, if philosophy cannot prove its independence, it might as well become reconciled to its own non-existence.

Fortunately, however, philosophy need not become reconciled to its own non-existence. It does exist and does have a valid status independent of science. We have just proved it. For did we not cite examples of philosophic judgments, the validity of which could not be challenged, and the distinction of which from scientific judgments was apparent? Very well, then, just as the denial of an intelligible world leads to a denial of philosophy, so also an affirmation of philosophy leads to an affirmation of an intelligible world. For if there are real philosophic judgments that are in no wise scientific judgments, then the method

of the philosopher must certainly be different from the method of the scientist. If the method of the philosopher is really different from that of the scientist, that can only mean that the philosopher is investigating a different kind of thing from the scientist, viz., an intelligible world as over against a sensible, phenomenal world.

IV. In Which Philosophy is Likened to Science in Order to be Distinguished from Mathematics

No sooner have we apparently attained our goal of distinguishing philosophy from science, both as regards method and as regards object, than we must needs pause a moment to make sure that we have not overshot our goal. There is something suspect about this notion of an "intelligible world." Its associations are all with innate ideas and pure *a priori* reasoning. This, however, is bad company for us, considering that we have been at such pains to show how philosophic knowledge must begin with the data of common experience. In fact, even such judgments as those involving the law of identity and the distinction between essence and existence would have no truth or relevance, unless there were a reality and an existence to which this law and this distinction could pertain. So also with the other judgments about the nature of knowledge, of change, and of multiplicity; unless there were such things as knowledge, change, and multiplicity, these judgments would have no bearing or import. How do we know that there are such things? We know it through common experience. In other words, however much it may be within the competence of the intellect to determine what and why things are, it is solely within the competence of sensory experience to establish the fact that they are.

Consider this last conclusion. If it is common experience that assures us of the existence of those very objects which it is the task of philosophy to reflect upon, what about our earlier likening of philosophy to mathematics? Is mathematics the kind of knowledge that must rely upon experience to supply it

with the actual objects of its investigation? To answer these questions, let us review our earlier conclusions. It may be remembered that it was through the supposed similarity of philosophy to mathematics that we sought to distinguish philosophy from science. Science, we suggested, is dependent upon experience to a greater extent than, and in a different way from, mathematics and philosophy. In the latter, experience is only psychologically relevant to the knowledge that is finally acquired; that is to say, it stimulates such knowledge and provokes it, but is in no sense a part of it. In natural science, on the other hand, experience provides the very materials of scientific investigation; what the scientist knows about, in other words, are those very objects which are presented to him in sense experience. Let us take an example. In geometry we may draw a circle on paper to illustrate some of the theorems which we are trying to prove. Nevertheless, the geometer will insist that what we have drawn is not what we are talking or thinking about. The visible circle, that is to say, merely suggests the ideal circle and must in no wise be identified with it. Contrast the procedure in science. There the sense data which are gathered through experiment are, to be sure, unintelligible simply in themselves; for an understanding of them much more is needed than the mere experiencing of them; still, the understanding which the scientist is seeking is always an understanding of these same data and not of some ideal object merely suggested by the data.

What of philosophy? Certainly it would seem to be much more like science than mathematics. Those objects which the philosopher meets with in common experience are the very same objects which he considers and tries to determine the nature of in later reflection. For example, it is through empirical observation that we come into contact with being and change. Yet that being which is characterized by the laws of identity and non-contradiction, and that change which we say necessarily involves the presence of four causes, are not a different being and a different change from that which we first came to be aware of in ordinary common experience. On the contrary,

they are identical. Hence we must accept the conclusion that in philosophy there is no such separation between the object experienced and the object known, as there is in mathematics.

Not only that, but we can go further and can assert that, far from there being in philosophy a separation of the object known from the object experienced, it is rather through experience, and experience alone, that the philosopher assures himself of the existence of those very objects whose nature he is seeking to determine. That there is knowledge, that there is being, that there is multiplicity, that there is change—these are all judgments of experience. Of course, when it comes to knowing what being is and what knowledge is and what multiplicity is and what change is, the philosopher must learn about these through intellectual reflection. Nevertheless, it may be said that philosophy resembles science and differs from mathematics precisely in its being concerned about existences and not merely about essences. Thus the philosopher wants to know, not simply what it is he is considering, but also that it is. Accordingly, he turns to experience as being the one way to existence. On the other hand, the mathematician seems indifferent to existence and so turns away from experience. For him it is sufficient to know the "what" without the "that"; it is sufficient to know merely how his terms are used, and not whether things corresponding to them really exist or not. Thus it is that so many modern mathematicians describe their technique and procedure as being "postulational."

If perchance there should be a mathematician who does not admit that his method is merely postulational, but who insists that a mathematical, non-empirical method can and does lead to existence, then inevitably he will fall into a sort of Cartesian idealism. It is this sort of idealism of which Professor Gilson has so brilliantly sketched the history and so tellingly exposed the fallacy. It consists in trying to make reality conform to our ideas rather than our ideas to reality. Thus Professor Gilson says:

> The primary consequence of Cartesian mathematicism, and that from which all the others flow, was the obligation which he imposed

upon the philosopher of always going from thought to being and even of always defining being in terms of thoughts. For the mathematician, the problem of essence always takes precedence over that of existence; the true circle and the true triangle are the definition of the circle and of the triangle, the figures empirically given in sensible experience being only approximations of their definitions. It is not by chance that geometry is the science of sciences for Descartes as for Plato. In every respect a systematic application of the mathematical method to the real could have as its immediate result nothing but the substitution for the concrete complexity of things a certain number of clear and distinct ideas, themselves conceived of as being the veritable reality.[6]

Again, he says:

What is a circle, to the mind of a mathematician? Is it this and that circle, such as I can imperfectly draw on a piece of paper or on a blackboard? Obviously not—the real circle is the definition of a circle, and nothing else. It may be that no material figure ever answered that definition in reality; what the mathematician is interested in is something different: the essence or true nature of the circle, as is to be found in its definition and only there.[7]

Compare also this exposé of the fallacies involved in confusing the method of philosophy with that of mathematics:

Up to the time of Descartes, and particularly during the Middle Ages, it had always been admitted that philosophy consists in a conceptual transposition of reality. In this sense it is just to characterize it as an abstract conceptualism; but it is not just to accuse it of having *reified* its concepts; on the contrary, the constant method of the scholastic is to go from things to concepts, so that he needs several concepts to express the essence of a single thing, according to the multiplicity of the points of view that he adopts towards it, and also so that no one less than he is in danger of taking what he abstracts from the real for reality. To convince oneself of this, it suffices to consider the case of any substance whatever. For the scholastic, it is always matter and form, that is to say, two concepts; neither is the matter anything apart from the form, nor the form apart from the matter. The person who *reified* concepts is not St. Thomas but Descartes, and he could not avoid doing it as soon as he elevated concepts to the rank of ideas.

[6] Gilson, *Le Réalisme Méthodique*, p. 54.

[7] Gilson, *The Unity of Philosophical Experience*, p. 153.

Abstracts of the real, he made of them models of which it is not enough to say that the real must conform itself to them but rather that they are the real itself. The distance which separates the two philosophers on this point strikes one forcibly when one considers that for Descartes every substance is known because it is reducible to the content of his idea, while for a scholastic every substance is unknown because it is a different thing from the sum of the concepts which we derive from it.[8]

Apparently, then, rather than allow ourselves to be lured into the pitfalls of Cartesianism we had better shun all mathematical shortcuts to existence, and stick instead to the one and only way to get from essence to being, namely by experience.

What now of our distinction between philosophy and science? Is it any longer valid? From what we have just said, it would appear that so far as its use of experience is concerned, philosophy resembles science and differs from mathematics. Yet from what we formerly said, it is clear that the real way to demonstrate philosophy's independence of science is to liken it to mathematics. In fact, all of the cardinal points of contrast between philosophy and science derive their force and plausibility from the apparent analogy existing between the methods and objects of investigation in philosophy, and the methods and objects of investigation in mathematics. For example, consider the contrast between philosophy and science which is based on the fact that for the philosopher experience is but a means to intellectual insight, whereas for the scientist the intellect is but an instrument in the acquisition of new empirical data. Obviously, this contrast cannot be even so much as understood, unless one appreciates the close resemblance between philosophy and mathematics. It is to the mathematician that one turns, if one wants a stock example of an investigator who uses experience as but a means, and for whom sense data act as mere stimuli to knowledge and not at all as materials for knowledge. Accordingly, if the philosopher is going to insist that in his case also experience is only psychologically, and not logically, relevant. he can do so only by admitting the analogy

[8] Gilson, *Le Réalisme Méthodique*, p. 54-55.

between his method of knowledge and the mathematician's.

Moreover, the same thing is true of that other contrast which we made between philosophy and science. It was the contrast based upon the difference between relying upon common experience and relying upon special experience. Yet, surely it would be to the example of mathematics that a philosopher would appeal, if he wanted to illustrate how a systematic body of knowledge could be erected on the foundations of mere common experience. After all, even a child has enough experience to know the first principles about figure and quantity.

Similarly, in regard to the difference between the phenomenal and the intelligible worlds, this mode of contrasting philosophy with science is certainly to be understood after the pattern of mathematics. That is precisely what the mathematician does; he passes from the circle that is drawn on paper, the phenomenal, empirical circle, to the idea of the circle, the intelligible circle.

In short, philosophy can be independent of science only by identifying its cause with the cause of mathematics. Yet from what we have said about philosophy's concern with existences, as over against mere essences, it simply is not possible to make an identification of philosophy's cause with that of mathematics. Does this mean, then, that philosophy cannot claim independence of science, after all? Hardly, for there is one point of contrast between science and philosophy which has been clearly brought to light in our previous discussions, and which, if we now analyze it more carefully, will definitely settle this question of independence. What we said was that conclusions in science are ever subject to revision and refutation, while conclusions in philosophy are immune to any correction by future experience. In short, scientific knowledge is only hypothetical, while philosophical knowledge is certain.

Such is the contrast; but how it is to be explained? The explanation is this: In any sort of experience we first become aware that certain things are, and immediately thereafter we want to know what they are—that is, what their nature and essence are. Now philosophy actually succeeds in penetrating to the nature and essence of certain things. Thus the philosopher

not only discovers that being is; but he also discovers something of the nature of being, for example, that it is subject to the laws of identity and non-contradiction. Science is not so fortunate. Thus the physicist discovers that there is physical, atomic being, but not with absolute certainty. Nor can he know with absolute certainty what the nature and structure of atomic being is. To take another example, the philosopher knows that change is, and he also knows what is essential to all change. The biologist cannot know with absolute certainty that there is evolutionary change in all living beings, or even what such evolutionary change is, supposing that it is.

Here, then, we do have a real distinction between science and philosophy. Moreover, it is a distinction through which all of our proposed distinctions between science and philosophy can be justified and explained. They can be justified and explained in such a way as to make it no longer necessary to bring in the analogy of mathematics. Take, for example, the contrast between science, as being that which uses reason as a means of attaining further empirical data, and philosophy, as being that which uses the empirical data as a means to intellectual insight. The ground for this lies simply in the fact that science never sees the essence of the given which it investigates; it never knows what it really is. Consequently, it must resort to hypotheses. What is hypothesis? A hypothesis is simply a kind of guess as to what the given is, and it is a guess which is made for want of a knowledge of what the given is. Of course, on the basis of the evidence at hand and of what we do see of the given, it may be highly probable that such a hypothesis does reveal the nature and essence of the given. Yet we cannot be certain that it does. As long as we cannot be certain about the essence, we can be almost certain that what we have considered to be the essence, i. e., our hypothesis, will some day have to be either altered or destroyed. Thus it is that the scientist must in all honesty seek out every scrap of evidence that would either invalidate or substantiate his guess. For that reason, the scientist's hypotheses are so constructed as to point to future experience, and it is in this sense that the scientist may

be said to use reason simply as a means to the attainment of further empirical data.

On the other hand, the philosopher does succeed in seeing the very essence of what is given in experience. He sees, in other words, not merely that something is but also what it is. This being so, there is no need of further experience. Certain knowledge has been attained, and certain knowledge, unlike hypothetical knowledge, is under no obligation to be referent to future experience. To be sure, in future experience you may find illustrations and examples of what you know with certainty, but you will never find proof or disproof thereof. Such is the sense, then, in which for the philosopher experience is but a means to intellectual insight.

Similarly, as regards the distinction between a reliance upon common experience and a reliance upon special experience, it is clear how its basis is to be found in the distinction between certain knowledge and hypothetical knowledge. Why is common experience adequate in philosophy ? Because in that which is given universally and to all men, the philosopher actually finds those natures and essences which he is looking for. They are there; he sees them; and in seeing them, he acquires knowledge—knowledge that is certain and beyond refutation. Accordingly, having garnered from common experience enough material for the attainment of truth, it is unnecessary for the philosopher to gather in more materials which could add nothing but clutter and confusion. With the scientist, on the other hand, it is quite different. In common experience he can never find such a thing as an essence; instead, he finds only accidents. Accordingly, he gathers more data and his experience becomes more specialized. For all his specialization, he never finds anything but accidental features. For instance, he can succeed very well in determining the quantitative aspect of a thing. Moreover, as his experiments become ever more refined, his knowledge of the size and shape and speed of the thing in question becomes ever more accurate. Still, there is always something lacking. There is lacking that intimate knowledge of the thing's very nature which alone could make possible an

understanding of just why there should be these particular quantitative manifestations rather than certain others. Without this understanding of why things must be the way they are, the task of the scientist is not yet complete: he does not yet have knowledge that is certain and beyond refutation. He must therefore continue his search ever further and further, for, after all, accidents are infinite in number, and to know all of them requires a process *ad infinitum*. Nevertheless, it is just this process which the scientist must carry on, because, so long as a certain knowledge of essences is unattainable, an ever more accurate and extensive knowledge of the accidents is in a sense an approximation to, in a sense a substitute for, this desired knowledge of essences.

Apparently, then, it is the certainty of philosophical knowledge in contrast to the tentativeness of scientific knowledge that provides us with an infallible criterion of the distinction between philosophy and science. Moreover we have seen how this distinction maintains itself despite the many similarities between science and philosophy, and despite the impossibility of likening philosophy to mathematics in order to distinguish it from science. Yet, no sooner do we seem to have established our thesis of the independence of philosophy, than we find that independence threatened again, this time by the mathematicians rather than by the scientists. If certainty be the criterion of philosophy's independence of science, it would appear to be equally the criterion of philosophy's dependence upon mathematics. What is more characteristic of mathematical knowledge than certainty? Where could there be found a better example of certain knowledge than mathematics?

Once more our effort to differentiate philosophy from both science and mathematics appears to be little more than an effort to steer between Scylla and Charybdis. If we try to distinguish philosophy from mathematics, we seem to be forced to liken it to science; if we try to distinguish it from science, we seem to be forced to liken it to mathematics. This seeming dilemma, however, is one that must simply be taken boldly by the horns. Suppose we admit that the criterion of distinction between

science and philosophy is the certainty of the philosopher's conclusions. Suppose we also admit that the distinguishing feature of mathematics is the certainty of its conclusions. Still, this does not force us into any embarrasing admission of an essential similarity between philosophy and mathematics. The reason is that the certainty achieved in mathematics is not the same kind of certainty as that achieved in philosophy, for although the mathematician does achieve certainty, it still is not a certainty of existence. Rather, it is by means of a retreat from existence and reality that mathematics is able to bestow so high a degree of certitude upon its conclusions. As Professor Gilson has suggested, it is the ideal which is the standard in mathematics, not the real. Consequently, the mathematician pays heed only to the demands of his own definitions and postulates, and blithely ignores the stubborn exigencies of the data of sense. The philosopher, on the other hand, heeds only the exigencies of the given and tries to ignore as completely as possible whatever pertains merely to his own arbitrary definitions. In other words, the method of philosophy is a method of description rather than of construction. The true philosopher, shunning idealism, must never allow himself to confuse the task of knowing with the task of making. His goal must be one of submission to an independently real, not one of mastery over a purely human artifact. To put it in other terms, we may say that the true end for the philosopher is a knowledge of what it is that is, and not of what it is that is thought. Similarly, such certainty as he acquires may be said to be a certainty about things and not about mere ideas.

Our thesis may now be considered as established: the philosophic quest is distinctive and unique; it is to be confused neither with scientific nor with mathematical investigations. Nevertheless, since the argument of this section has been devious and tangled, it might be well for us to summarize it. We began by pointing out how misleading it was to differentiate philosophy from science on the ground that philosophy examines an intelligible world while science examines a merely phenomenal world. Far from being a point of distinction, it was shown how

this is really a point of similarity between philosophy and science; it is in this precise respect that these two resemble each other and differ from mathematics. Both are concerned to know the nature of the very world that is given in experience, and neither is concerned about the nature of a world, which, instead of being given in experience, is merely suggested by experience. After this disclosure of the resemblance of philosophy to science, the question immediately presented itself as to the independence of philosophy from science. Could this any longer be maintained? That it could be, we tried to show by pointing to the certainty of philosophical conclusions in contrast to the merely hypothetical character of results in science. At the same time we were careful to distinguish the kind of certainty found in philosophy from the kind of certainty there is in mathematics: the latter is not a certainty about existence; the former is.

V. Summary and Conclusion

Having thus summarized our final section, it might be well for us to summarize our whole paper. In the first section, we stated the case for philosophy's independence of science. In philosophical inquiries a different method is used from that in science; reliance is placed on common rather than on special experience. Also in philosophical inquiries a different object is investigated, namely the intelligible world, in contrast to the phenomenal world. In the second section, we undertook to explain and justify what we had been content simply to present and affirm in the first section, namely philosophy's independence of science. This was done by comparing philosophy to mathematics. By this means it was possible to show that philosophical judgments were *a priori*, and hence independent of any conclusions that either had been or might be established as a result of the special experience of the scientist. At the same time, it was explained how, even though philosophic judgments were *a priori*, they were not innate. As a result, the method of philosophy was said to be an empirical method, having its origin in common experience—and this, despite the fact that

the object of philosophy was the intelligible world. Having reached this point, we were forced in the third section to consider certain empiricist objections which challenged the possibility of any *a priori* knowledge of reality, as well as the existence of any such thing as an intelligible world. In answer to these attacks we simply presented various philosophical judgments, which were clearly judgments about reality, and which at the same time were clearly *a priori* in the sense of being neither based on past scientific discoveries nor subject to correction by future ones. In other words, it is simply a fact that there are philosophical judgments, and that these judgments are not of the character of scientific judgments. However, with this as the conclusion of the third section, the questions still remained open as to whether the object of philosophy was not after all the intelligible world, and as to whether the method of philosophy was not essentially mathematical. In the fourth section both these questions were answered in the negative. Philosophy investigates the world of the empirically given,[9] just as does science. Nor is the method of philosophy mathematical, the aim of philosophy being not so much to construct as to describe.

Throughout the whole discussion our thesis has been that philosophy represents a different kind of knowledge from that of science. In the course of the paper we hope we have shown in what sense the one kind of knowledge is different from the other. There is still another question as to why there should be these different knowledges.[10] That they are different, and how they are different, we have seen. Why they are different is a question that must wait for another time.

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[9] This conclusion would doubtless have to be qualified in order to take account of the rather special case of natural theology.

[10] In a private conversation Professor Gilson once remarked on how this now archaic usage was once in respectable currency, notably in Bacon.

THE DISTINCTIVE NATURE OF THE GIFT OF UNDERSTANDING

A Commentary on the "Summa Theologica," II-II, Q. 8

I. The Gifts in General

THERE is nothing in the purely physical order of things that affords a parallel to the action of the Holy Ghost on the supernatural life of man. Although at first sight symbiosis seems to be an apt concept to illustrate the relations of this sweet and mysterious Guest to His living temple, closer examination reveals so many awkward and misleading details that the example becomes nearly worthless. The algae in a lichen, or the intestinal protozoa in termites, contribute to their partner's nourishment in a state which makes it easier to assimilate, receiving in return food elements which unaided they could not obtain, and the craven crab in return for the sea-anemone's protection carries it to pastures ever new. But in all this the most noticable point is the mutual aspect of the partnership; the *quid pro quo* is strongly emphasized. The indwelling of the Holy Ghost on the other hand is unilateral. It would be closer to say, with certain reservations, that man dwells in the Holy Ghost, for while he contributes nothing to the self-sufficient Divinity, he receives much, and receives it all as a pure gift. Whence the Church on Pentecost sings of the Holy Spirit as "Gift of the most high God."

The dependence of man on the Holy Ghost is manifold. His every act as well as his very being depend on Him, "For in Him we live and move and are."[1] He moves us to the particular good that we do, both in the physical and moral order, and that too, sometimes, in an extraordinary manner, as when the spirit of God "rushed" upon Balaam.[2] *A fortiori*, then,

[1] *Acts*, xvii, 28.

[2] *Numbers*, xxiv, 2.

He moves us in the supernatural order: "Likewise the Spirit helpeth also our infirmity."[3] But in this order there are two modes of action, human and divine. Under the influence of the Holy Ghost the infused virtues elicit their proper operations. These actions are from an intrinsic principle, are regulated by reason, whence comes the human mode, and in a sense are in our possession, for if, on the one hand, supernatural aid is required, on the other, man himself must determine for himself just what and how much he will do, so that in the words of St. Paul, "Every man shall receive his own reward, according to his own labor."[4] But, over, and above this, there is another sort of motion in which man is more acted upon than acting and is moved, in a manner entirely beyond his powers, to his supernatural end: "But when they shall deliver you up, take no thought as to what or how to speak . . . for it is not you who speak, but the spirit of your Father who speaketh in you."[5] Jesus was led into the desert;[6] the minds of the disciples were opened.[7] These motions do not proceed from man according to the intrinsic principle of reason, after the human mode, but from an extrinsic principle, the Holy Ghost, after a manner that is superhuman and divine. They do not proceed from any deliberation on our part, although they are free, resulting from a particular impulse of the Holy Ghost activating special supernatural habits to which, nowadays, the word "gifts" is reserved.[8]

St. Thomas points out in the first article of question sixty-eight, where he is distinguishing the gifts from the virtues, that we ought to follow the manner of speaking of Holy Scripture which calls the gifts "*spiritus*," or breaths, "because they are in us by divine inspiration."[9] Father Gardeil

[3] *Romans*, viii, 26.
[4] *I Cor.*, iii, 8.
[5] *Matthew*, x, 19-20.
[6] *Matthew*, iv, 1; *Mark*, i, 12; *Luke*, iv, 1.
[7] *Luke*, xxiv, 25.
[8] G. M. Paris, O.P., *Dissertatio de Donis Spiritus Sancti in Genere* (Turin: Marietti, 1930), p. 10.
[9] *Summa Theol.*, II-II, q. 68, a. 1.

remarks the richly-laden signification of St. Thomas' words. That " because "—*secundum quod*—in the mouth of a scholastic is the affirmation of an essence or the essential and immediate property of an essence, and not mere consequence.[10] Inspiration signifies some sort of motion from without. Hence the essential note of the gifts of the Holy Ghost is that He is the mover, and not reason as in the virtues.

Holy Scripture also speaks of the Spirit resting within us, for as St. John Chrysostom says: " After He comes, He remains, nor does He depart." Just as the moral virtues perfect the appetitive faculties by rendering them obedient to the commands of reason, so there are dispositions in the faculties of the soul rendering them obedient to the motions of the Holy Ghost. For to the degree that the moving principle is exalted, by that much more is it fitting that the subject be disposed to receive this motion so that there be a proportion between the mover and the one moved. And so, where the mover is most powerful, by His very motion almost He induces a habit in the subject if He moves him as one dwelling within him.[11] Of course, actual grace in sinners causes no habit to be formed, but this is where a sinner and a person in the state of grace differ. The just man has in himself habitual principles needing the motion of grace, which principles also habilitate him in the order of a well-disposed subject to every impulse of the First Mover and the Leader of minds to eternal life.[12] So, as St. Thomas notes, because man is endowed with free will, he himself acts even under the action of the Holy Spirit, and requires a habit, a permanent disposition rendering him prompt to follow the motion of the Holy Spirit.[13] This is the narrowest and proper sense of " gift."

In the thought of St. Thomas, the seven gifts enumerated by Isaias are distinguished among themselves according to the powers of man which they perfect. Four gifts are seated in

[10] *Dictionnaire de Théologie Catholique,* Vol. 4, part 2, col. 1775.
[11] Paris, *op. cit.,* p. 51.
[12] L. Billot, *De Virtutibus Infusis* (Rome: 1905), I, 183.
[13] *Summa Theol.,* I-II, q. 68, a. 3, ad 2um.

reason: wisdom, understanding, knowledge, and counsel; and the remaining three in the will: fortitude, piety, and fear of the Lord. To further distinguish the intellectual gifts, St. Thomas encountered some difficulty. In his first attempt, he uses as his norms the distinction of the speculative and practical reason, and the difference between the two acts of the intellect, apprehension and judgment. Within this frame, he places understanding in the speculative apprehension, wisdom in the speculative judgment, knowledge in the practical judgment and counsel in the practical apprehension of truth.[14] Further thought led him to modify, not the distinction of the gifts, but the basis for it, so that when he comes to the distinction of the gifts in particular, we find he has enlarged the office of the gifts without confusing the particular operation of each. " He wishes understanding to be penetrative of all, wisdom the judge of all through the very highest cause, knowledge likewise the judge through created or proper causes, and counsel likewise applicative of all to work; and follow this," says Cajetan, " because it is of a more divine ingenuity." [15]

Ingenious though it may be to Cajetan, it does not at first glance offer a clear statement of the distinct office of each of the various gifts. Only by a careful scrutiny of St. Thomas will some light be shed on the difficulties. This paper proposes to establish the distinctive nature of the gift of understanding according to the mind of St. Thomas.

II. The Gift of Understanding

In treating of the gift of understanding, there are some difficulties to be borne in mind and, if possible, answered as we go along. The first and foremost is that the operation of this gift is found most perfectly in the mystical states and cannot be well expressed in human language. As St. John of the Cross says, " Keep in mind that these matters are beyond all words. The intelligence of pure truths requires for its proper explanation that God should hold the hand and wield the pen of the

[14] *Ibid.*, q. 64, a. 4.

[15] *Comm. in I-II*, q. 68, a. 4.

writer."[16] The same excess of light that caused St. Thomas to leave the *Summa* unfinished leaves the operation of this gift indescribable, except in halting and inept terms.

Further, it is necessary to distinguish understanding from faith, a difficult task because it seems that an act of faith can fill the office of the gift. To distinguish understanding from other intellectual gifts, moreover, is difficult because it cannot readily be shown just what act understanding exercises that the others cannot exercise. And, finally, because it is not bound to the state of the wayfarer, or of faith, we must explain what act it exercises in heaven when it is found without faith, to the aid of which, however, it was ordained in this life.[17]

The precise and detailed treatment of the gift of understanding is found in the eight articles of the eighth question of the *Secunda Secundae* of the *Summa Theologica*. In the first article, St. Thomas gives a purely nominal definition of what he means by the gift of understanding, sketches the similarities and differences between the natural and supernatural gift, and indicates broadly the objects to which the gift will extend. In developing these general notions, St. Thomas proceeds in the orderly fashion so characteristic of him. "Since the gifts are ordained to operation, it is fitting that they be distinguished according to their object, in which acts are diversified according to their species."[18] So in his following articles the principles enunciated in Part One of the *Summa Theologica*[19] are applied. There are three ways to distinguish habits: by the active principles which give rise to them, by the natures to which they are ordained and in which they inhere, and by the operation to which they are ordained, that is, their formal object. In the first and third ways, the gifts in general have been distinguished from the virtues, and in the second way the intellectual gifts from those in the appetitive faculties. Now

[16] *Ascent of Mt. Carmel,* Bk. II, c. 26.

[17] Cf. John of St. Thomas, *Cursus Theologicus,* I-II, disp. XVIII, a. 3 (Lyons: 1663).

[18] *III Sent.,* d. XXXIV, q. 1, a. 6.

[19] *Summa Theol.,* I, q. 18, a. 2; q. 54, a. 2.

it remains to employ the second and third ways to distinguish understanding from the three others: wisdom, knowledge, and counsel.

Because of the external order of the questions, the first thing to notice is that understanding is linked in some way with the theological virtue of faith. This relation is the subject of the second article. Here is determined the relations of understanding and faith by delimiting their objects and therefore their sphere of action. Here also are described the proper and extended objects of the gift; so, in the third article the object by extension is discussed and also the faculty in which understanding is found.

Speaking of the faculty in which it is found, St. Thomas, in articles four and five, lays the psychological basis in the supernatural order which demands the gift. In the fourth, we find that charity is the *raison d'être* of this gift, and in the fifth the utter dependence of the gift on grace is emphasized by a special discussion of unformed faith. Despite the fact that the virtue of faith, which is the rule and reason of the gift, remains in a truncated fashion without charity, yet understanding cannot remain to aid it.

Now that the nature of the gift is fairly well established from its subject and object, it should be an easy matter, in article six, to distinguish it from the other gifts. And, finally, according to his general plan in his special treatment of each gift, St. Thomas, in the seventh article, tops off his consideration of this gift with its corresponding beatitude and, in the eighth, considers the corresponding fruits of the Holy Ghost. The logical order of the whole discussion is evident and commends itself to us as the guide to follow as we progress.

The gifts are all connected in charity and the Holy Ghost,[20] just as all the virtues are connected in prudence and reason. This is perhaps the reason why St. Thomas finds it so hard to keep the notions proper to wisdom and knowledge out of his discussion of understanding. Terms like " regulate " and " right

[20] *Summa Theol.*, I-II, q. 68, a. 5.

estimation" seem to savor of the gift of wisdom rather than understanding, and we shall try to explain them when we come to them.

For the existence of the gift of understanding, St. Thomas is content to accept the authority of Holy Scripture. Although the text which he cites in the *Sed Contra* of the first article could cause some difficulty were it the sole foundation of the doctrine of the gifts, there are many other places in Sacred Scripture where the working of the Holy Ghost is indicated. Joseph is described as a "man full of the Spirit of God," because he interpreted the dream of Pharaoh.[21] Those who made the priestly vestments of Aaron were filled with the "spirit of wisdom," [22] and Beseleel was filled "with the spirit of God, with wisdom and understanding, and knowledge in all manner of work." [23] The "spirit" that inspired Moses was taken from him and given to seventy men,[24] and "when the spirit had rested upon them they prophesied, nor did they cease afterwards." [25] Many of the great figures of the Old Testament are noted as being blessed with a special spirit: ". . . and Josue was filled with the spirit of wisdom . . .";[26] ". . . and the spirit of the Lord was in him, (Othoniel) and he judged Israel.";[27] ". . . the spirit of the Lord came upon Gedeon . . .";[28] "the spirit of the Lord came upon Jepthe . . .";[29] ". . . the spirit of the Lord began to be with him (Samson) . . .";[30] ". . . the spirit of the Lord came upon David from that day forward . . . but the spirit of the Lord departed from Saul." [31] The sapiential works and the Psalms are filled with references to the gifts of wisdom and understanding: "I will bless the Lord who hath given me understanding.";[32] "Give me understanding and I will search thy law. . . .";[33]

[21] *Genesis*, xli, 38.
[22] *Exodus*, xxviii, 3.
[23] *Ibid.*, xxxi, 3.
[24] *Numbers*, xi, 17.
[25] *Ibid.*, 25.
[26] *Deuteronomy*, xxxiv, 9.
[27] *Judges*, iii, 10.
[28] *Ibid.*, vi, 34.
[29] *Ibid.*, xi, 29.
[30] *Ibid.*, xiii, 25.
[31] *I Kings*, xvi, 3.
[32] *Ps.*, xv, 7.
[33] *Ibid.*, cxviii, 34.

"By thy commandments I have had understanding. . . ." [34] The classic text is from Isaias:

> And the spirit of the Lord shall rest upon him; the spirit of wisdom and of understanding, the spirit of counsel and of fortitude, the spirit of knowledge and of godliness. And he shall be filled with the spirit of the fear of the Lord. He shall not judge according to the sight of the eyes, nor reprove according to the hearing of the ears.[35]

Isaias pictures a perfect judge who, thanks to the special dignity and power that the spirit of the Lord will confer upon him, will give special attention to those so often neglected in the Orient. The effects that the permanent dwelling of the spirit produces are the qualities of an ideal judge: wisdom to know the true point of view; understanding, the gift of discernment, of judgment, to comprehend the circumstances and the other facts that can influence or determine the sentence; counsel, the art of choosing the means most proper in a given case; fortitude, making him superior to obstacles and respect of persons; knowledge of the law; and in all his actions respect for God, piety and fear of the Lord.[36]

In most of these citations it is not clear either from the text or the context that the gifts of the Holy Ghost in their narrowest and strictest meaning are meant, but the whole series shows the operation of the spirit of God, the Holy Spirit, in a particular way. Isaias crystalizes the vague expressions of his precursors into a powerful and moving picture of the messianic Judge, and this picture under the skillful interpretation of the Fathers and Doctors, from Justin to Gregory, becomes the basis for the doctrine of the gifts in St. Thomas and the Church. As Père Touzard remarks at the close of his article, "From the last Father of the Church to the Angel of the Schools is not far." [37] With this wealth of tradition as well as

[34] *Ibid.*, 104.

[35] *Is.*, xi, 2-3.

[36] J. Touzard, "Isaie, XI, 2-3a et Les Sept Dons du Saint Esprit," *Revue Biblique*, VIII (1899), 250.

[37] *Ibid.*, p. 266.

Scripture behind him, St. Thomas assumes the existence of the gift. His first concern is not to establish its existence, but to clarify the confusion involved in the term "*intellectus*" The term is taken from *intus* and *legere,* to read within, the intimate penetration of truth.[38]

The word *intellectus* has many meanings in Scholastic language. It sometimes means the essence of the soul itself, because the soul may be denominated by its principal power. In the *III de Anima* and in many places of the *Summa,* those wonderful creatures we call angels are called *Intellectus* or *Intelligentiae.* Again the word sometimes means that potency of the soul which enables it to know, as distinct from the will. This intellective potency is further divided into the *intellectus agens* and the *intellectus possibilis.* Very often it means a natural habit, one of the intellectual virtues, the habit of first principles. It may also designate one of the integral parts of prudence, a knowledge of present matters and a just estimate of some particular end in the light of ultimate principles which are accepted as *per se* known. And, finally, it signifies, as a gift of the Holy Ghost, a certain acute penetration of divine things. Here,[39] it means neither an intellective potency, nor a habit of first principles, but a habit divinely infused by which one so penetrates the mysteries of the Christian religion that he sees that the arguments which are opposed to them do not lessen their truth, whether he can solve the arguments or not.[40] St. Thomas gives various descriptions of what he means by the gift of understanding: it is "a supernatural light," [41] a "certain excellence of knowledge penetrating to the very core"; [42] it "implies a certain penetration of truth"; [43] its function is "to penetrate what is said." [44]

A nominal definition joined to what he has taught on the gifts in general would be enough to answer the question St. Thomas poses in the first article, i. e., "Is understanding a gift

[38] *Summa Theol.,* II-II, q. 8, a. 1; q. 49, a. 5, ad 3um.
[39] *Ibid.,* II-II, q. 8, a. 1.
[40] Sylvius, *Comm. in II-II,* q. 8.
[41] *Summa Theol.,* II-II, q. 8, a. 1.
[42] *Ibid.,* ad 3um.
[43] *Ibid.,* a. 5, ad 3um.
[44] *Ibid.,* a. 6, ad 2um.

of the Holy Ghost ? " [45] He goes further, however, and shows something of the nature of the gift, its subject, and the objects to which it extends; in the answer to the first objection he expressly declares what he only implied in the body of the article, that the gift is necessary for salvation.

By calling this gift a light, and comparing it with the natural light which is better known to us, he not only gives us a glimpse of its nature, but harmoniously blends the working of the supernatural in us with the natural. The background against which all this discussion must move is the fundamental principle that man is ordered to a supernatural end.[46] Since man's knowledge begins from the sense and from something external, it is evident that his knowledge will penetrate to essences only to the degree of power that the light of his intellect enjoys. But the strength of this light is limited, and the depth of his penetration is determined by nature. To ferret out those things which though necessary because of his end, exceed his natural powers, man needs assistance from the same order as his end. This is the gift of understanding which is a supernatural light.

For St. Thomas, man may enjoy three different lights, not always simultaneously, but varying with different individuals in different states. The highest of these is called the light of glory. This is found only in the just who are enjoying the beatific vision. It is a supernatural habitual quality, an augmentation of the intellective power " after the manner in which a potency is made more powerful to act through a habit inhering in it." [47] To see God face to face is far above the powers of any created faculty left to its own resources, and so God strengthens it by infusing this new light into the soul, not as a medium in which God is seen, but as an added perfection strenghtening the intellect to see God immediately.

This light of glory is the culmination of another light which man can enjoy while on earth. Thomas calls it the light of grace.[48] It too is supernatural in origin, and a quality perfecting the soul

[45] *Ibid.*, a. 1.
[46] *Ibid.*, I-II, q. 3, a. 8.
[47] *Ibid.*, I, q. 12, a. 5, ad 1um.
[48] *Ibid.*, I-II, q. 109, a. 1.

to know, in this life, things that are beyond the limits of its natural powers. There are at least two common forms that it takes—the light of faith and the light of prophecy. The latter is not a habitual perfection, but rather a vivid and fleeting glimpse of things to be revealed which comes and goes as God wills, in order that the things seen in its transient light may be passed on to mankind by the prophet. Nor does it presuppose charity in the soul. The light of faith is the result of a habit, the virtue of faith joining us to God, and lasts as long as faith remains. Not only does it extend the field of our knowledge by putting us in contact with truths which we could not otherwise know or assent to, but it contributes a new insight into the things with which the natural power of the intellect is engaged.

This natural power of the intellect is also called a light, the natural light of man, or the natural light of the active intellect. We speak of intellectual light after the manner of corporeal light. Now corporeal light is the medium by which we see, and it serves vision in a twofold manner. On one hand, through it a thing only potentially visible becomes actually so, as while driving on a dark night, only that portion of the potentially visible countryside which the headlights illumine is actually seen. On the other, the power of sight itself is strengthened to see. By analogy then, intellectual light can be either the power of the intellect to understand, or also that by which something becomes known to us.[49]

The light of the gift of understanding should have a place in this outline. It is not the light of glory despite the great similarities between the two. The light of glory once attained is inamissable, but since the gifts are founded in charity which is lost by mortal sin, they too can be lost. We know from faith that while on earth, Christ enjoyed the beatific vision, and at the same time all the gifts. *A posteriori* then, they are distinct. And, finally, we have the famous dictum of St. Gregory, " No one, as long as he lives in mortal flesh, so advances in the strength of his contemplation, that the eye of his mind fixes

[49] *Q. D. de Ver.*, q. 9, a. 1.

upon a ray of the uncircumscribed light; whatever is seen in this manner is not God Himself, but under Him." [50] We shall return to this question later.

Since the light of understanding is a supernatural light, it cannot be the light of reason, which leaves only the light of grace. As a matter of fact, a sober and objective examination of the first article will reveal that this is as far as St. Thomas cares to proceed. His argument concludes no further than the necessity for a supernatural light and is practically the same as the argument advanced for the existence of a light of grace:

> . . . and those things to which we cannot conclude from first principles exceed the natural light of the intellect. Of this sort are matters of faith, future contingents, and the like, and therefore a knowledge of these truths cannot be had without a light of grace freely given, such as the light of faith or of prophecy or something of the sort.[51]

And in the *Summa*, in answer to the question of whether a knowledge of truth is possible without grace, he says:

> . . . the human understanding has a form, namely, intelligible light, which of itself is sufficient for knowing certain intelligible things, those, namely, which we can come to know through the senses. Higher intelligible things the human intellect cannot know unless it be perfected by a stronger light, the light of faith or prophecy, which is called the light of grace inasmuch as it is added to nature.[52]

Here in answer to the question whether understanding is a gift of the Holy Ghost, he replies:

> . . . the natural light of our understanding is of finite power; wherefore it can reach to a certain fixed point. Consequently man needs a supernatural light in order to penetrate further still so as to know what he cannot know by natural light; and this supernatural light given to man is called the gift of intellect . . .[53]

This is his general concept which St. Thomas, as he proceeds in

[50] *Homiliae XL in Ezechielem*, Lib. II, Hom. II, *P. L.* Vol. 76, col. 956.
[51] *II Sent.*, d. XXVIII, q. 1, a. 5.
[52] *Summa Theol.*, I-II, q. 109, a. 1, c.
[53] *Ibid.*, II-II, q. 8, a. 1.

his tract, trims, bends and polishes until the precise nature of the gift is apparent.

There are three orders of being with unequal powers who can illumine the human mind. Man can enlighten another man in two ways. He can propose some object for consideration and so lead another to a knowledge of it, as when a guide points out some monument or inscription. But, as St. Thomas and Cajetan observe, this is not, properly speaking, illumination, but only locution.[54] For real illumination it is not sufficient to merely offer a truth; it must be offered as illumined by the mind of the one who presents it, as when a teacher illumines the mind of a student. This familiar process is thus described by Bañez,

> There are two things required for the knowledge of truth,—apprehension and judgment. Some truth can be hidden from the intellect either because the intellect is not strong enough to apprehend it since it is not proposed proportionately, or because it cannot make a certain judgment about it on account of the deficiency of light which is the proper principle of judgment. Whence it follows that the manifestation of truth can be twofold, either on the part of the apprehension, as when the master teaches the student to form a proper concept of some conclusion, using similar examples, distinctions, etc.; or on the part of the judgment, as when the master proposes to the pupil principles and means guided by which he can judge of the conclusion.[55]

Referring to several pertinent passages from St. Thomas,[56] Bañez continues:

> The intelligible principle to which the conclusion is resolved has the notion of intellectual light under which the intellect judges of the truth of the conclusion.[56a]

Mention here of a passage from Cajetan will throw further light on the matter:

> There is in the teacher an active ordination of his proper concept

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[54] *II Sent.*, d. IX, q. 1, a. 2, and 4um; cf. Cajetan, *Comm. in I*, q. 106, a. 1.

[55] Bañez, *Comm. in I*, q. 106, a. 1.

[56] *Summa Theol.*, II-II, q. 15, a. 1; *Q. D. de Ver.*, q. 9, a. 1, ad 2um.

[56a] Bañez, *loc. cit.*

illustrating and measuring to the student the thing conceived. The student applies his intellect to the formation of a concept corresponding to the concept of the same thing he has been shown, and so he participates in the superior light of the professor. Thus there comes to be, in some fashion, in the student a new light because of this participation by which he is actually illuminated. Thus the light of the student is intensified, because it becomes more efficacious for understanding.[57]

Bañez, discussing the same magistral illumination, comes to the same conclusion although he phrases it differently:

The principles on which a demonstration is based are the instruments of the natural light, inasmuch as the natural light of the active intellect leads the possible intellect to assent to the conclusions under those principles by resolving the conclusion to those first principles. Whence it follows that the master, by proposing principles and means, properly strengthens the natural light of his disciple, not, indeed, increasing it intensively but extensively, since the natural light can now judge from the conjoined principles. And so from the natural light, the principle and the mean, one integral virtue is formed to judge of the conclusion.[58]

This mode of illumination is of course impossible in the gift of understanding, because we are not given any species by the Holy Ghost to aid our understanding. But the whole process of magistral illumination is important in order to understand the next order.

The second order of beings, the angels, can illumine those under them, whether angels or men, after the fashion of human masters and also by directly strenghtening the intellectual light of inferiors by uniting themselves with it. " Some say that an angel in no way teaches like a person offering light, which seems expressly against the words of Dionysius," [59] remarks St. Thomas.[60] Cajetan seems to be among the " some," for he describes and explains the angelic illumination after the manner of teacher and pupil, in which " the light of the inferior is intensified because more efficacious, although not properly intensified." This magistral illumination, as we have seen, is

[57] *Comm. in I*, q. 106, a. 1.
[58] *Loc. cit.*
[59] *De Coelesti Hierarchia*, c. X.
[60] *II Sent.*, d. IX, q. 1, a. 2, ad 4um.

only indirect illumination, inasmuch as there is no direct tranfer of power or light but only a principle or a medium which will excite the inferior to act. This is not sufficient for Bañez; according to him:

> In the illumination of an inferior angel, his light is strengthened not only by instruction but through an intellectual conjuction and union by which the light of the inferior and superior are joined together for one principle of knowledge of truth.[61]

He is led to this by the teaching of St. Thomas—that the teacher strengthens the intellect of the learner "not by an active power as was said of the illumination of the angels . . .[62]

The mind of St. Thomas is, therefore, that the strengthening of the light of the inferior angel is not only with respect to an intelligible principle under which truth is manifested, but also with respect to some action proceeding from the active virtue of the superior into the inferior. St. Thomas teaches, moreover, that illumination of an inferior angel depends on the superior not only for reception but also for its conservation, just as the knowledge of a conclusion depends on an actual knowledge of the principles.[63] Therefore, there is required a natural influx of the light of the superior into the illuminated; otherwise knowledge of the inferior would be only in inception and not in conservation, as the teaching of a master in the mind of his student depends only in its inception on the master. The light of the superior must stay with the inferior because the intelligible object by its very nature exceeds the light of the inferior.

Bañez gives some examples of the union of diverse things forming one principle of operation without losing their own identity. The first is from color and light. Visible light does not inhere in color, but the light in the air makes the color in the wall actually visible, not only as the terminative object of sight, but also the motive object. It is colored light that is the unique integral principle moving sight through visible species, yet the light is not the color, for in vision there is a natural subordination of color to light. There is another

[61] *Loc. cit.* [62] *Summa Theol.*, I, q. 117, a. 1. [63] *Ibid.*, q. 108, a. 7, ad 2um.

example from goodness in the intellect and will. Apprehended goodness, precisely as apprehended, is the formal motivating force of the object of the will, and is the form and the act of the will constituting with it one integral principle of volition, and although it concurs to produce the volition, it does not really inhere in the will, because of the natural subordination of the will to the intellect. Finally, in any act of knowledge, the intelligible species is the result of the partnership of phantasm and light of the active intellect, and yet the light does not inhere in the phantasm nor cause anything in it. So, when a potency, the intellect of an angel, is joined to a superior form, becoming with it one principle, the potency can still vitally elicit its proper operation with an increased power, intrinsically and intensively.

The third order of beings who illumine man is God. God is alone and unique in His power. He can swiftly and perfectly enlighten man either permanently or for a time, not only by the indirect methods of men and angels, but by directly increasing the intellective power of man. The light of man's intellect in the first place is only a created participation, a circumscribed ray of the uncircumscribed light of the supreme intellect of God.[64] By the infusion of grace into the soul, man is united to God, and as a result of this divine habit in the soul, all its faculties are divinized and strengthened. As with all things that only participate their perfection, the closer they approach their source the stronger they become, and so the intellect in approaching God becomes stronger. When the Holy Ghost moves it, it seems to leave behind all the defects of being joined to a body, and seems to become angelic in the clarity of its intuitive judgments. Just as the inferior angel under the illumination of the superior becomes able to understand objects that exceed its ordinary powers, so the intellect, furnished with the light of the Holy Ghost in the gift of understanding, penetrates, grasps, and assents to supernatural truths which would present an impenetrable front to its natural

[64] *Ibid.*, q. 12, a. 2.

powers. Again, like an angel, this power remains in the intellect only as long as the intellect is united to God by grace; once the mover withdraws, man relapses into the obscurity of faith. This in general is what is indicated to us by broadly comparing the gift of understanding to light.

In the answers to the difficulties[65] St. Thomas starts to distinguish this generic notion of supernatural light. From the first, we gather only that it is superior to that by which we know common principles, and from the second we gather its intuitive super-rational and esssential character.

The natural light of the human intellect is of a quality or a permanent form which makes it sufficient of itself to know some proportionate object, but this is not man's only means of natural knowledge. Joined to the light as instruments to a craftsman are the first principles of knowledge.[66] They are the first conceptions of the mind, known through and in their very terms without any discursus or reasoning. With their help the intellect is ready to apprehend and to penetrate its proper object—essences. St. Thomas says:

> There are different ways of apprehending essences. Sometimes the essence is apprehended immediately and not through those things which are wrapped around the essence; this is the mode of apprehension in separated substances, and so they are called intelligences. Sometimes again, the intimate core of a thing is not penetrated except by the things around it as through some kind of gateway; this is the mode of apprehension in men, who from properties and effects proceed to the knowledge of an essence. Because this process is discursive, the apprehension of man is called reason, although it terminates at the understanding of a thing, because its inquiry leads to the essence. Whence if there are some things which are apprehended at once without the operation of reason, we say that these things are understood, and not reasoned to; such, for example, are first principles which everyone approves as soon as he hears. In the first way, the intellect is a potency, but taken in the second way, it is called a habit of first principles. Just as the human mind, moreover, does not penetrate to the essence of anything except through accidents, so also it does

[65] *Ibid.*, I-II, q. 8, a. 1. [66] *Q. D. de Ver.*, q. 11, a. 3.

not penetrate spiritual things except through corporeal things and the likenesses of sensible things.

Whence it is that faith, which holds spiritual things seen as in a dark glass, perfects the mind in a human mode and, therefore, it is a virtue. If, however, the mind is so elevated by a supernatural light that it is led to gaze upon spiritual things as they are in themselves, this is beyond human power. This is what the gift of understanding does; it so illustrates the mind concerning the things of faith that like first principles, they are proved the minute they are heard. This understanding is, of course, a gift.[67]

Hence, when in answer to the second objection,[68] St. Thomas says that the super-added light has the same relation to things known supernaturally as natural light has to first principles, he definitely indicates that the distinctive note of the light of the gift of understanding will be the swift intuitive grasp it offers of spiritual things, by the illumination of the Holy Ghost without the burden of step-by-step reasoning.

By comparing the gift of understanding to the habit of first principles in the natural order, St. Thomas does not mean to institute a comparison of the instrumental relation so much as to point out the nature of the act of the gift. The knowledge of first principles is gained without inquisition and argumentation, in which point human knowledge touches that of the angels although it does not equal it because we are still dependent on the senses.[69]

Indemonstrable principles are known at once, as soon as we hear the terms, for as soon we know what a whole is and what a part is, at once we know that every whole is greater than a part . . . and so, the knowledge of principles which become clear as soon as the words are known is conveniently called understanding.[70]

It is easy to make a mistake here that will distort the whole notion of the gift. Taking the words as they stand, it seems that a simple apprehension of the terms of the first principles is sufficient to generate the habit. Yet such is not the case.

[67] *III Sent.*, d. XXXV, q. 2, a. 2.
[68] *Summa Theol.*, I-II, q. 8, a. 1, ad 2um.
[69] *Q. D. de Ver.*, q. 16, a. 1.
[70] *VI Ethic.*, lect. 5.

First principles do not consist in the mere apprehension of terms, but in a composition of subject and predicate, an assent and a judgment. The knowledge of "whole" and the knowledge of "part" is indeed a simple apprehension, but to say that the whole is greater than its part is a judgment. This is but an application of the general doctrine that truth is in the judgment formally, and not elsewhere.[71] Like any other habit in an active potency, there must be an act of assent before we can acquire the habit of inclining us to do so.

Now, with the gift of understanding, all this is lifted into the supernatural order. The light of this gift is not merely to apprehend the terms in which supernatural truths are proposed, but to apprehend correctly and then to compose and divide and so arrive at the truth without, of course, any long process of reasoning, which proceeds step by step until a conclusion is reached. By the gift, the mind is perfected in the apprehension of truth, not any apprehension, but that apprehension which pertains to the way of invention.[72] Invention is not what we understand by the term today, a novel application of the principles of mechanics to some problem, but it is the name applied to a process of finding truth. In this discovery of truth

> we proceed in a human way from sense to memory, from memory to experiment, from experiment to first principles which are known immediately the terms are known; this process perfects the intellectual habit which is the habit of first principles. We proceed further in the same mode by advancing from these principles to conclusions. For this we are perfected in those things which are under reason by another intellectual virtue which is called science; in those, however, which are above reason, we have faith which is the inspection of divine things seen, as in a dark glass. To grasp what might be called the naked truth of spiritual things, is above merely human powers, and requires the gift of understanding which illumines the mind concerning those things heard through faith.[73]

As John of St. Thomas says:

> Invention does not concern the simple apprehension of terms, but

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[71] *Summa Theol.*, I, q. 16, a. 2.
[72] *Ibid.*, I-II, q. 68, a. 4.
[73] *III Sent.*, d. XXXIV, q. 1, a. 2.

inquires about some truth and the propositions that invention attains; for some things we learn; some things we find and so attain them, not learning them from others. What we learn are not simple terms and the apprehension of them, but propositions and truths, whether known from their terms or from argument; similarly, therefore, what we attain by invention are not only simple terms, but truths, and the propositions by which such truths are enunciated.[74]

From the answer to the second objection,[75] where the process of reason is contrasted with pure intellection, it is evident that propositions—truths—are meant, and not mere simple terms, because in the process of reason we start from some proposition that we understand and proceed by many steps to a conclusion, another proposition, which is now known to us in the light of the propositions we knew at first. By the light of first principles, we understand not terms but propositions, truths known through themselves, in which something is affirmed or denied of something else, e. g., " Whatever is, is; a thing cannot be and not be at the same time "; and the more subtle but still self-evident truths like, " there cannot be many gods." Equally, then, by the light which is called the gift of understanding, we can grasp with intuitive ease the supernatural meaning of the objects of our knowledge. We shall now consider these objects.

St. Thomas shows the objects to which the gift of understanding refers by analogy with the intuitions of the natural faculty. There are six categories of hidden things which the gift aids us to bring to light: the substance under its accidents; the sense beneath the words; the truth behind the symbol; the spiritual under its sensible appearances; the cause in its effect; and the effect in its cause.

The first intuition is exemplified in the familiar story of Blessed John Dominici and Antonino Pierozzi, known to the world as St. Antoninus, Archbishop of Florence. What possessed the great Dominici, with his apostolic thirst for austerity

[74] *Cursus Theologicus*, I-II, disp. XVIII, a. 3.
[75] *Summa Theol.*, I-II, q. 8, a. 1, ad 2um.

and reform, to even compromise with the pale, sickly, motherless lad whom the doctors promised would soon die of consumption, and promise him admission to the Order of Preachers should he commit to memory the Decretal of Gratian in a year? He must have seen beneath that unprepossessing exterior the stuff which properly handled would bring the glory of sainthood to the Order of the Church. Under the accidents he saw the substance.

As for penetrating the sense of words and the spirit of the letter, St. Thomas gives the example of the disciples at Emmaus of whom St. Luke [76] says, "Then He opened their understanding, that they might understand the Scripture." Long before he had said to His followers, "Are you yet also without understanding?" [77] This example of the disciples at Emmaus, though traditionally cited by nearly all spiritual writers as an operation of the gift of understanding, may lose something of its force when we recall that St. Thomas also uses it in his discussion of the gift of prophecy,[78] where he calls it an example of a charism pertaining to St. Paul's "understanding of instructions." If given as a transient vision by which certain texts concerning Christ were momentarily illumined for the good of the young Church, it is a charism, but if it is a habitual quality remaining in the mind, then it is the gift. In the Acts, mention is made of Lydia, the prototype of all those pious souls "whose heart the Lord opened to attend to those things which were said by Paul." [79] Many of the saints found in the highly symbolic language of the Old Testament the expression of their hidden mystical joys and delights. St. Thomas confessed, "Never have I read a book that the Holy Spirit has not aided me to comprehend it, and to plumb the profundity of a mystery." [80] St. Antoninus places his whole discussion of the interpretation of Scripture under the title of this gift.

It is the gift of understanding that makes us see the spiritual

[76] *Luke*, xxiv, 25.
[77] *Matthew*, xv, 16.
[78] *Summa Theol.*, II-II, q. 173, a. 2.
[79] *Acts*, xvi, 14.
[80] Tocco, vii, 40.

reality behind its sensible appearances. The villagers of Nazareth saw only a poor young carpenter laboring in a shop, but Mary, his Mother, saw not only the most perfect human soul that ever lived; she saw her God. This " seeing " is not through any medium, like a sign or a mirror or a footprint or an image, which usually links the apprehensive power and the thing signified; it is accomplished by the superabundant light of the gift of understanding, just as the light of the sun joins the power of sight and the thing seen.[81]

The world saw a common criminal dying between two of his kind on Calvary, but His mother with the eyes of her soul saw the redemption of the world depending on that sorrowful passion, and so she held herself upright at the foot of the Cross, and instead of sinking in the human grief of the holy women, she stood and shared the redemption of the world. Indeed, in the Blessed Virgin we find this gift in a more perfect degree than in any other creature. As soon as the Angel announced to her the part she is to play in the redemption, she responded " How shall this be ? " This was not disbelief, but the gift seeking to penetrate and to see the plan of God. Some writers attribute the *Magnificat* to this gift, since her clear perception of her prerogatives and her supernatural vocation so elevated her heart that it could not contain its joy. St. Albert, however, attributes the *Magnificat* to the gift of wisdom, because of his notion of the gift of understanding.[82] This is how he describes the gift in Mary:

> The gift of understanding is to know God in His image. Between knowing God in His image, without light, in the obscurity of faith, and knowing the uncreated light by uncreated light, without an image, there is a middle way to know in created light, without an image. Just as one of the extremes is of pure wayfarers, and the other of those in Heaven, so the middle pertains to the state in which Our Blessed Mother was. She, therefore, had this gift more perfectly than other creatures.[83]

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[81] St. Antoninus, *Summa moralis*, IV, tit. 15, c. 18.

[82] *Comm. in Evang. Lucae*, i, 46. *Opera Omnia* (Paris: 1890-1899), XXII, 122.

[83] *Mariale*, q. 64. *Opera Omnia*, XXXVII, 120.

The saints too, knew how to see in every human creature the soul made to the image and likeness of God, and very often the Holy Spirit dwelling there. " Henceforth," says St. Paul, " we know no man according to the flesh." [84] There is a remarkable example of intuition in the life of St. Catherine of Sienna, when she prepared Nicholas di Toldo for his execution and accompanied him to the scaffold.

> The knife fell and I receive his head into my hands. I fixed my eyes on the Divine Goodness, and Lo ! I beheld as clearly as one beholds the sun, Him who is God and man. He was there and He received the blood . . . He received it and placed it in the open wound of His side, in the treasury of His mercy . . . Oh how lovingly He looked on that soul bathed in the blood made precious by being united to His own ! Then Father, Son and Holy Ghost received him, and He was inundated with a joy that would have ravished a thousand hearts . . . Then I felt a delicious peace, and the perfume of that blood was so sweet to me, that I would not suffer them to wash away what had fallen over me.[85]

In this blood united to Christ through grace, Catherine saw the blood of the Lamb, and sought to plunge herself into the Sacred Side. So many other examples of the operation of this gift in an eminent degree are to be found in the life of this holy daughter of St. Dominic that Fr. Antoine Gardeil attributes this gift to her as her predominant characteristic.[86]

By natural reason most men come to a knowledge of the existence of God, but by the light of revelation we know that God is one in three divine Persons. By the light of the gift of understanding we go on to contemplate in the Holy Trinity as far as we can in this life, what are the relations of Father, Son and Holy Ghost, how they are three Persons, how they are co-equal, co-eternal, how they differ only in their relations to each other, and so on. As Cardinal Manning says, " The one phrase, ' the Word was made flesh,' contains the whole theology

[84] *II Cor.*, v, 16.

[85] *Letters*, n. 97.

[86] *The Gifts of the Holy Ghost in Dominican Saints*, Trans. by A. Townsend, O.P. (Milwaukee: Bruce, 1937), p. 88.

of the Incarnation in all its treatises." [87] We see it expanded in the course of time—in the phrases of the Nicene creed: "God of God; . . . consubstantial with the Father"; in the Athanasian creed, with its more precise terms—the two natures, two substances, one Person, perfect humanity; and in the third part of the *Summa* and all the later theologians. Yet many a humble soul knows just as much as the theologians without all this study and science, like the monk Anthony of whom St. Augustine speaks.

It is in the light of this gift that the poor and untutored solve the apparent difficulties of belief. To those who judge by the letter, or by outward facts, the sorrows and the miseries of the world seem to obscure its witness to the goodness if not the existence of God; the sorrow and miseries of the Church likewise seem to deny it is the kingdom of an all-powerful God; the evergrowing conquests of natural science are bent by some against the truth of revelation. How find the unifying thread of truth in all the advancements of our age unless by the superhuman light of the Holy Ghost? To penetrate all these chaotic and disturbing elements and find at their core the calm and majestic plan of God requires more than mere reason, handicapped as it is with distractions and imperfections. It requires the additional light of the gift of understanding to pierce the rind and find the sweetness of the fruit, to crack the shell and find the kernel of truth.[88] Whence it is evident why spiritual writers call this the gift par excellence of preachers and doctors in the Church.

III. The Gift and Faith

God has presented man with a sheaf of supernatural truths which he must know and act upon in order to reach his final end, and yet which exceed his natural powers of understanding. By faith, man accepts these truths and holds them firmly, yet it is an exterior adhesion in which the will bears all the expense,

[87] H. E. Manning, *The Internal Mission of the Holy Ghost* (New York: Kenedy, 1904), p. 272.

[88] Cf. M.-J. Friaque, O.P., *Le Saint-Esprit*, Part III, c. 7 (Paris: 1886).

the intellect remaining dissatisfied. Then, under the impulse of the Holy Spirit, the man with the gift of understanding finds himself able to face these notions of revelation as easily as first principles in the natural order. He has found a new light enabling his mind to penetrate and to seize them quite clearly. How reconcile the shadows of the faith with the luminous evidence of the gift of understanding? With the operation of the gift, is the faith going to disappear?

The reply is, of course, in the negative. By distinguishing the formal aspects of the objects of the virtue and the gift, we see how they can work side by side in the same subject without interfering with each other in this life. Faith has three formal objects. Its primary one is the revealed mysteries to which it clings and about which no positive intuition is possible in this life.[89] The secondary object of faith is all the species of truths concerning creatures as ordained to God, and here the more light the better for the faith. Faith is said to have a third object only by extension, that is, inasmuch as it operates through charity in all moral acts.[90]

As Father Garrigou-Lagrange writes,

> Faith makes us know God in a way which is still too abstract, too exterior, *in speculo et in aenigmate*, by excessively narrow formulas that must be multiplied. Hope and charity directed by faith share in the imperfection of faith. These two virtues of the will lack vitality and keep too much of the human manner as long as they are directed only by reason illumined by faith.
>
> With only the virtues, even though supernatural, man is like an apprentice who knows fairly well what he must do, but who has not the skill to do it in a suitable manner. Consequently the master who is teaching him must come from time to time, take his hand and direct it so that the work may be presentable.
>
> As we always remain apprentices the Holy Ghost must intervene habitually in our works that they may be perfect. That is why, unlike purely gratuitous graces, the gifts which make us amenable to divine inspirations as the virtues do to the directions of reason, should be permanent in us. (*Summa Theol.*, I-II, q. 68, a. 3.)

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[89] *Summa Theol.*, II-II, q. 1, a. 1.

[90] Cf. *Dictionnaire de Théologie Catholique*, Vol. 4, part 2, col. 1743.

A soul can advance by the exercises of the virtues. In this it is active. Or by the inspiration of the Holy Ghost who breathes where and when He wills. Here the soul is docile, acting less than it is acted upon.[91]

St. Thomas says:

The gifts are given in aid of the virtues by which the potencies of the soul are perfected to acts proportioned to a human mode, like faith which sees but only cryptically in a mirror . . .[92]

The defects in a virtue are twofold. There are accidental defects, springing from some indisposition on the part of the virtue, which are remedied by augmenting the virtue. The more serious defects are the ones essential to the habit. This defect is remedied by a higher habit which is called a gift because given by God and exceeding the manner of human operation, like understanding which brings it to pass that we see in some way the things of faith clearly and limpidly. The defects of the faith come from the very constitution of man;

His knowledge of faith has its origin in the sense, inasmuch as he knows the meaning of words proposed by the senses, but these fail in the representation of Him about Whom faith is primarily concerned. Faith, therefore, has not perfect knowledge.[93]

To faith pertain properly those things whose vision we shall enjoy in eternal life and through which we are led there.[94] The only way we can attain them in this life is be believing, i. e., by having the will, on the authority of God, force the intellect to assent. " The argument from divine authority does not make the thing evident in itself." [95]

The believer, who by the very fact that he believes does not see, is liable to confuse the sensible element with the spiritual, and fall a prey to illusions and errors. What knowledge he has, moreover, is bound to be superficial and fragmentary. He must

[91] *Christian Perfection and Contemplation*, Trans. by Sr. M. Timothea Doyle, O.P. (St. Louis: Herder, 1937), pp. 281 ff.

[92] *In Isaiam*, xi, 2.

[93] *III Sent.*, d. XXIV, q. 1, a. 2, qt. 3, ad 3 um.

[94] *Summa Theol.*, II-II, q. 1, a. 7.

[95] *Ibid.*, q. 4, a. 1, ad 5um.

search around and reason about the formulas which contain supernatural truth, unlike the angel who with a glance penetrates to the interior of things. Nor is the mind at rest, satisfied in this knowledge. " The perfection of assent is caused by the simple light of faith, but since this light is not perfectly participated, the imperfection of the intellect remains, and so it remains unquiet." [96] Finally, our love of God must partake of the imperfections of our faith; it is easier to love what we see than what we do not see.

The gift, because of its superhuman mode of action is free from these defects, and when found in the same subject can supply for the deficiencies. With regard to the confusion of the spiritual with the sensible, St. Thomas says:

> There are two sorts of cleanness, one dispositive and a preamble to the vision of God, which is the purification of the affection from inordinate affections, and this is carried out by the virtues and the gifts in the appetitive faculties; the other cleanness of the heart is complementary, as it were, to vision, and this is the cleansing of the mind from phantasms and errors, in order that those things which are proposed of God be not taken after the manner of corporeal phantasms nor according to the perversion of heretics, and this cleanness is the work of the gift of understanding. Therefore, under the aspect of merit, the sixth beatitude, " Blessed are the clean of heart, for they shall see God," pertains to this Gift.[97]

From what we have said of the nature of this gift as a light, this is easy to see. The mind under the impulse of the Holy Spirit is helped over and past the obstacles of imagery to reach the truth at the heart of the propositions.

The superficial and fragmentary nature of the knowledge of faith is assisted by the instinctive and clairvoyant flashes of the gift, with this reservation:

> We can understand a thing in two ways: in one, perfectly, when we attain to a knowledge of the essence of the thing understood and the truth of the statement understood (*enuntiabilis intellecti*) according as it is in itself; in another way, something happens to be

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[96] *Q. D. de Ver.*, q. 14, a. 1, ad 5um.
[97] *Summa Theol.*, II-II, q. 8, a. 7.

understood imperfectly when the very essence or the truth of a proposition is not known as to what or how it is, but nevertheless it is known that those things which appear externally are not contrary to the truth, inasmuch as man understands that he must not recede from the things of faith, because of what appears extrinsically.[98]

The precise role of the gift of understanding then will be to aid the virtue of faith to overcome this defect without destroying its essential characteristic of blind assent. "Faith implies only an assent to propositions, but understandng implies a certain penetration of the truth."[99] This is seen by applying this distinction to what we have said above concerning the objects of faith. The gift does not give a perfect and positive insight into the principles and primary object of faith, but only a negative and imperfect one, attacking the external impediments and obstacles that, by the very fact that we are still in the state of wayfarers, separate us from God. Yet even here, St. Thomas does not hesitate to say, "Even in this life, God can in some way be seen, the eye [of the mind] being cleansed by the gift of understanding."[100] Between God and ourselves are interposed the sensible formulas of revelation. But illumined by the light of the Holy Ghost in this gift, they become as it were transparent. As St. John of the Cross writes in the twelfth canticle:

> Then does the soul call the faith crystalline because it makes the soul to see through the now transparent veils, the Saviour of men, because it is pure, clean of errors, empty of corporeal images, strong in divine truth.
>
> With Thy light Thou dost illumine me so that I may know all Thy truth; Thou art that Light above all light, which illuminates supernaturally the eye of my intellect, clarifying the light of faith so abundantly and so perfectly that I see that my soul is alive, and in this light receives Thee the true light.[101]

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[98] *Ibid.*, q. 8, a. 3.

[99] *Ibid.*, a. 5, ad 3um.

[100] *Ibid.*, I-II, q. 69, a. 2, ad 3um.

[101] *Dialogues*, Trans. by A. Thorold (New York: Benziger, 1907), c. 167.

As to the substance of the mysteries, we can perceive sometimes the motives of them, connections one with another, analogies, and their many harmonies.[102] Further than this we cannot go concerning the essence of God and the mysteries concerning Him directly.

Even the imperfect knowledge that the gift offers is a great aid to faith, for by it, the little ones of the flock see that all the apparent difficulties are invalid. Even when one does not always know how to reply to objections, one knows that in spite of the multiple and complicated claims of error, the truth is there in its simplicity and its certitude. While heresies and negations based on scientific formulas try in vain to take the citadel of the fervent soul by assault, the soul intuitively clings to Catholic dogma. This is the explanation of the not infrequent phenomenon of the remarkable insight and appreciation of spiritual things found in unlettered and dull-witted men and simple women in whom however faith and charity flourish in a high degree. To these simple souls, neither the speculations of theologians nor the divine reasons are explicitly known; but by the gift of understanding they are so convinced of divine truths and so strengthened in the faith, that they are not in the least perturbed by the sophisms of heretics, the threats of tyrants, or the insidious snares of malignant spirits. Here, too, we see these rustic saints and humble women spending long periods in divine contemplation, scarcely able to interrupt most sweet colloquies of internal prayer and quiet; we see them able to deliver sound and integral judgments in doubtful matters because their appetites are correct; we see them savor eternal things and spurn the temporal. They rightly appreciate divine things, because their minds are crammed with the consideration of divine truths hidden from the wise and prudent and revealed to the little ones, for, as Christ and the Holy Ghost tell us, the conversation of God is with the simple-hearted.[103]

[102] Billot, *op. cit.*, p. 185.

[103] Cf. V. Contenson, O. P.., *Theologia Mentis et Cordis,* Lib. VIII, Diss. II, c. 2, Spec. 2 and 3 (Paris: Vives, 1875), III, 526 ff.

As for the secondary objects of the faith, "the effects of the Divinity through which man is helped to tend to divine fruition, Holy Scripture, for example, and all it contains," [104] access to such truths as these lies open through study, or through the teaching of other men, but, in a higher and easier and more salubrious mode, through the instinct of the Holy Ghost [105]— "I am he that in an instant elevates a humble mind to understand more reasons of the eternal truth than could be acquired by ten years' study in the schools." [106]

The assent of the intellect to truth is of two kinds: in one the intellect is moved by the object whether it be known in itself, as in first principles; or in the light of other principles and conclusions. The object, in other words, is really seen by the intellect, because it itself moves the faculty to knowledge. In the other way, it is moved not by intrinsic evidence on the part of the object, but by the will.[107] The intellect cannot be determined either by the simple inspection of the terms of a credible proposition as by principles, nor from the light of other principles as in demonstrative conclusions. The will, however, chooses to determine the intellect, because of something sufficient to move the will but not the intellect. This is to believe. One believes the words of some man because it seems proper or useful, or, especially, when a reward of eternal life is promised.

The act of belief is unique among the acts of the mind. In the mere apprehension of things there is no assent, because the truth is not grasped as such, and assent is only the truth. In one who doubts, there is no real assent, nor is one who has only an opinion. The man with the habit of first principles assents to them, but without collation and therefore without a sort of reiterated intellectual activity called cogitation. The man with the habit of conclusions has both cogitation and assent, but the cogitation is the cause of the assent, inasmuch as from the

[104] *Summa Theol.*, II-II, q. 1, a. 1.
[105] Cf. Billot, *loc. cit.*
[106] *Imitation of Christ*, Bk. III, c. 43, n. 3.
[107] *Summa Theol.*, II-II, q. 1, a. 4.

collation of principles and conclusions, he resolved his conclusion into its principles, and now his intellect rests. In science the motion of reason begins with the habit of principles and ends in them.

Cogitation and assent are not equal because cogitation leads to the assent and stops satisfied. In faith alone are cogitation and assent equal. Assent is not from the cogitation at all but from the will, but because the intellect is not in this manner terminated to one part of a contradiction as to its proper term—the vision of something intelligible—it remains unquiet. Its motion has no term and it still has a cogitation and an inquisition about what it believes. Whence it is that the intellect of a believer is said to be captive [108] because it is bound by another's terms as another's, and not as its own. Whence it is that there can arise contrary motions to that which it believes, unlike the states of understanding and science.[109]

The gift of understanding is a light added to the natural power of the intellect, enabling it to penetrate the truths of faith. Its formal characteristic is to apprehend and to know, whether perfectly or imperfectly. To understand, as distinguished from to believe, is always with some intrinsic evidence, whether positive or negative. The fact that in this life we do not attain perfect vision is not due to any defect in the gift viewed from its proper formal aspect, but because the matter is not duly disposed so that it be seen in itself, " for we walk by faith and not by sight." [110] Since the gift moves the mind, according to the illustration of the Holy Ghost, to rightly penetrate and understand things proposed to it, it demands evidence of itself and from its formal note, and takes it as far as it can from the matter proposed to it, positive and perfect in heaven, imperfect and cryptic in life under the shadows of faith.[111]

[108] *II Cor.*, x, 5.
[109] *Q. D. de Ver.*, q. 14, a. 1.
[110] *II Cor.*, v, 7.
[111] Cf. T. A. Vallgornera, O.P., *Mystica Theologia* (Turin: Marietti, 1927), I, 392, n. 559.

Now, this evidence is just what the intellect lacks in faith. The gift penetrates the very terms from which the truths of faith are constituted and discerns between truth and falsehood, between spiritual and corporeal things. It understands that spiritual things are not such as we gather from our phantasms and that, consequently, we must estimate them much higher than we see and know them to be. The gift of understanding, therefore, brings a certitude or a quietude in matters of faith. For this reason the faith which is a fruit of the Holy Ghost corresponds to the gift of understanding; the habit or theological virtue of faith is not the fruit of the gift, but a certitude of mind and a rest in the faith is this fruit. To the gift, therefore, pertains not a mere judgment of faith and assent, but a discernment of spiritual from material, supernatural from natural, truth from error, which it can achieve evidently, by at least negative evidence. "The gift of understanding is born to perfect every intellectual perception regarding faith, whether it precedes or follows the gift." [112]

The fact that the object of faith remains obscure shows that the idea of light and illumination of the gift must be modified to some degree. It is not a light in the sense of glory, or even of faith's obscure light, but a limited capacity for the illuminating instincts of the Holy Ghost. The reason for its limitation, however, is not intrinsic to it; the motion of the gift is to see and penetrate under the instinct of the Holy Spirit. The fact that only when we have received the light of glory will we see God is what limits the lengths to which the Holy Spirit can impel us. The gift of understanding precisely as understanding implies vision, perfection, clarity. It is on the part of the object and the subject while the state of faith endures that the limitation comes.

We must recall here what St. Thomas has written on the relation of the gifts to the virtues. He readily admits the superiority of the gifts over the intellectual and the infused moral virtues, because of the superiority of the motive power

[112] Cajetan, *Comm. in II-II*, q. 8, a. 7.

in the former. But in comparing the theological virtues with the gifts, the latter must cede their place of eminence because it is more noble to be united directly to God by the virtues than to be moved obediently to that end by God, just as a man who already has his million is richer than another still working and saving for it. Faith is a regulative principle which even the Holy Ghost respects, and the obscurity of faith is the check on the illumination of the gift of understanding.

Given an object not too sublime for its powers, however, the gift can do a perfect job. This object is, as we have seen, the secondary objects of faith, that is, all the truths concerning creatures as directed to the first truth. Holy Scripture and the history of the church are full of truths which we can understand perfectly. Examples are not wanting among the saints. St. Augustine tells us of how he sometimes received an instinctive and clear knowledge of a passage of scripture he had read many times before without perceiving there anything special. St. Teresa in her life naively tells of how much that she wrote seemed to be coming from someone else who understood it much better than she,[113] and that often, without knowing how, she understood the most profound verses of the Psalms while saying office. Many souls ignorant of human science find in the Scriptures meanings which escape the laborious investigations of exegetes and theologians. The writings of St. Catherine of Sienna, of St. Teresa, and in our day the pious and profound reflections of Sr. Elizabeth of the Holy Trinity, a Carmelite of Dijon, on the writings of St. Paul show that these matters may be understood. We have already seen other examples of the intuitions of this gift.

To summarize: The gift of understanding has the same cause as the virtue of faith, God and grace; the same objects to penetrate as the faith to believe, the divine truths; the same medium of knowledge, the formulas of revelation. It differs from faith in its mode of knowledge which is divine in the gift and human in the virtue, and in its proper and specifying act

[113] *Life*, c. 14.

which is to assent on the authority of God in the virtue and to apprehend and to judge on evidence of truth and falsity in the gift.

" Faith works through love," says the Apostle,[114] and throws the whole field of human actions into the lap of faith. Besides its material and formal object, faith extends to the whole field of Christian practice, regulating it and drawing from the formulas of revelations luminous rules for the conduct of life which can be found nowhere else. The intratrinitarian relations, for example, provoked the saints to realize in themselves the virtues of which the relations are the exemplars. In other words they sought to make practical, workable, operable, the abstract and conceptual expressions of the faith.[115]

O Holy Trinity I have known in Thy light, which Thou hast given me with the light of Holy Faith, the many and wonderful things Thou hast declared to me, explaining to me the path of supreme perfection, so that I may no longer serve Thee in darkness, but with light, and that I may be the mirror of a good and holy life, and arise from my miserable sins, for through them I have hitherto served Thee in darkness.[116]

Wherever the faith extends, so must the Holy Ghost assist with his gift of understanding.

The gift of understanding extends also to certain actions, not as though these were its principal object, but insofar as the rule of our actions is the eternal law.[117]

We must be careful here not merely to note the argument and conclusion and pass on, because such a course will lead to a confusion of the gifts later on. The reason for the apologetic tone in extending the gift to operations is that it stretches the nature of the gift beyond intuitive inspection and judgment of matters of faith. To say that the gift extends itself is only a manner of speaking because understanding no less than the

[114] *Gal.*, v, 6.
[115] *Dict. Théo. Cath., art. cit.*, col. 1743.
[116] *Dialogues, loc. cit.*
[117] *Summa Theol.*, II-II, q. 8, a. 3.

other gifts is primarily a passive habit, a disposition to follow promptly the instinct of the Holy Ghost. Just what particular gift prompts us to follow this motion depends upon the term to which we are moved.

It appears that even St. Thomas had difficulty in determining the distinctive role of each of the intellective gifts, so closely are they joined in charity. In his consideration of understanding he revises what he had written on the gifts in general, and yet seems to confuse wisdom and understanding, judgment and perception.[118] There is only one phase of our moral actions where the gift of understanding as we know it can operate. This operation consists in penetrating and grasping the provisions of the eternal law, which exceeds our natural reason, and in discovering in our human acts those regulations.[119] Once these principles are known, it is the office of wisdom to apply and to order them to our actions. This is his express teaching when he comes to treat *ex professo* of the gift of wisdom. In answer to the question whether wisdom is solely speculative or also practical, he answers:

> . . . the superior reason is deputed to wisdom, the inferior to science. The superior . . . . looks to supernal, that is, divine, reasons both by considering and by counseling, considering indeed according as it contemplates divine things in themselves, counseling moreover according as through divine things it judges of human acts, *directing human acts by divine rules.* Thus therefore wisdom as it is a gift from the Holy Ghost is not only speculative but practical.

And in the answer to the third objection:

> . . . to wisdom pertains first a contemplation of divine matters which is a vision of the principle; and afterwards to direct human acts according to divine reasons.[120]

St. Thomas had a special difficulty in this whole question. It is the first of his particular considerations of the gifts, and he had nothing except general notions to use. As he progressed,

[118] *Ibid.* [119] *Ibid.*, ad 3um. [120] *Ibid.*, q. 45, a. 3.

he could use what he had written previously on other gifts for comparison and contrast, but here some confusion is inevitable. He insists however that the gift of understanding is primarily speculative, that is, ordained to the apprehension of truth, for the sake of truth and nothing more. For the rest, we can interpret him to mean that the gift of understanding can enter into the regulation of moral actions insofar as the knowledge of the meaning of the principles of such actions can be, but not necessarily always is, due to the gift of understanding, while the actual regulation, and so forth, is left to the other gifts and virtues.

Another source of possible confusion is the fact that the faculty which the gift of understanding perfects is the superior reason, a faculty perfected also by the gift of wisdom. But St. Thomas notes that there are two acts in the intellect, perception and judgment.[121] The former is perfected by understanding and the latter by wisdom and science.

A good idea of the exalted role of this gift in our life can be gathered from considering just what faculty of the mind it perfects. The superior reason is, for St. Thomas, and before him for Augustine and Dionysius, that part of the intellect which contemplates the things of God. It is not that the intellect, being a simple, immaterial faculty, has parts, but that it has different relations to various objects giving it different acts which only appear to proceed from different faculties. The superior and inferior reason are distinguished thus:

> There are certain natures superior to a rational soul, others inferior. Since, moreover, everything understood is after the manner of the one understanding, the knowledge of superior things in the soul is inferior to the things themselves; but of inferior things, the knowledge of them is superior because in being known they have a more noble state of being than in themselves; and so there is a different relationship to both, and different offices. For according as it looks to superior natures, either contemplating their truth and nature absolutely, or drawing from them a reason and a quasi-exemplar of action, the reason is called superior reason; according as it looks

[121] *Ibid.*, a. 2, ad 3um.

to inferior things either to be scrutinized in contemplation or to be disposed through action, it is called inferior reason. Each object, superior and inferior, however, is apprehended by the human soul according to the common note of intelligibility; the superior, as it is immaterial in itself, the inferior according as it is stripped from matter by the act of the active intellect.[122]

And to show its dignity:

. . . among creatures such is the order that first are the angels and secondly the rational soul. Because the rational soul is joined to a body, the knowledge due it according to its own proper order is a knowledge which proceeds from sensible to intelligible things, and does not arrive at a knowledge of truth, except by a previous inquisition. Its knowledge, therefore, is called rational, but because the angel is purely incorporeal, not united to a body, the knowledge due his nature is truth apprehended without inquisition. Because of this he is called an intellectual nature. It is fitting, moreover, that in the human soul which is configured to the angels in the order of creatures, there be some sort of participation of intellectual power by which it apprehend some truth without inquisition, just as naturally known first principles are apprehended in speculative and practical matters . . . This power is conveniently called the spark for as a spark is a bit of light flying up from a fire, so this power is some small participation of intellectuality, in comparison to the intellectuality of the angels.[123]

From the supreme part of rational nature, St. Thomas turns next to the supreme part of super-nature, grace and charity.

IV. The Gift and Grace

St. Thomas now comes to consider the relation of sanctifying grace and the light of understanding. He treats the questions from two angles, deciding in the fourth article that all who are in the state of grace have the gift of understanding, and then in the fifth [124] because of the fact that faith is in those without grace, he further determines that only those in grace have the gift.

[122] *Q. D. de Ver.*, q. 15, a. 2.
[123] *II Sent.*, d. XXXIX, q. 3, a. 1.
[124] *Summa Theol.*, II-II, q. 8, a. 4 et 5.

By the infusion of sanctifying grace into the soul, the human will is rightly directed to the good. But because of the subordination of the will to the intellect, to be rightly directed to anything the will must first know it, or at least, of it. Therefore, the presence of grace requires some knowledge of the end, but as Cajetan, commenting on this article, immediately asks, why is not faith sufficient to supply that knowledge ? It is because of its imperfection which affects charity, as St. Thomas insinuates by bringing charity into the question in the very next line. If you ask why cannot faith informed by charity furnish enough knowledge, in answer Cajetan cites faith's imperfect participation in the divine light—

> Since an inferior participates to a lesser degree what is found in a superior, the light of faith, in bringing about the proper estimation of things in an intellect moved by a perfect will, is, as it were, intensified by the intensified light of the gift. A sign of this is that informed faith differs from formless faith, not on the part of the intellect, but on the part of the will. Since, then, formless faith lack the proper estimation of things which is found with informed faith, and this proper estimation belongs to the intellect, it is evident that this other light, that is of the gift of understanding, is added to the light of faith.[125]

Whence it becomes apparent that charity is of great importance in this question. It is the medium of the demonstration that properly concerns the gift, for as St. Thomas says:

> Just as the Holy Ghost through the gift of charity orders the will of man in order that it be directly moved to some supernatural good, so also He illumines the mind of man that he might know some supernatural truth, to which the right will should tend. Therefore, just as charity is in all in the state of grace, so too is the gift.[126]

The gifts are all infused into the soul at the same time as sanctifying grace, as St. Thomas will later teach.[127] Besides, as Maritain says:

[125] Cajetan, *Comm. in II-II*, q. 8, a. 4.
[126] *Summa Theol.*, II-II, q. 8, a. 4.
[127] *Ibid.*, III, q. 62, a. 2; q. 69, a. 4.

Grace confers on us supernaturally the radical power of grasping the Infinite as object of our intellect; it gives us a new source of spiritual activity which has for its proper and specific object the Divine Essence seen in itself. By the vision to which grace proportions us radically, the creature becomes true God Himself, not substantially, but in the sense that it achieves that immaterial union which comes of the act of understanding.[128]

By grace and the theological virtues God is rendered personally present to the soul. Even with the virtues of faith, hope, and charity, man is still a defective and at times impotent agent in this new order, and so God comes personally to elevate and direct him to his proper place. God's suave and harmonious way of doing things has placed in man qualities which dispose him to receive and to correspond with His motion, and which are proportionate to the virtues which rendered God present to the soul and, as it were, gave Him the opportunity for working it it. These are the gifts of the Holy Ghost.[129]

Our charity renders us desirous of knowing God as He is, but this insistent curiosity is unable to tear aside the veils which prevent us from knowing Him immediately. Charity to be perfect, to be efficacious for salvation, requires knowledge, because the will is so constituted that if it is to wish well and correctly its object must be clearly seen and so presented to it. But it is not the nature of faith to know clearly. The knowledge that comes to us from the Church, Holy Scripture, the Fathers and Doctors of the Church is inadequate to translate to us the life of an Infinite Being with transcendent and ineffable perfections. Our intelligence, far from pentrating at first sight the affirmations of the faith, falls back in incomprehension. To think of God and to represent to ourselves what He is in Himself, we must try with great effort to transpose to Him the perfections of created realities and, as we have seen, we are prone to fall into material, temporal, and human notions.[130]

[128] Quoted by B. L., "Philosophie et expérience mystique," in *La Vie Spirituelle,* Mai, 1926 (Suppl.), p. 167.

[129] T. Pegues, O.P., *Commentaire de la Somme Théologique* (Toulouse: 1907-31), IX, 344.

[130] H. O. Noble, O.P., "Les dons du Saint-Esprit auxiliaires des vertus morales," in *La Vie Spirituelle,* XVI (1927), 26.

The Holy Ghost, already in us by charity, supplies for the deficiencies of our knowledge, and fills our need for more knowledge by elevating our minds to new discernments and new judgments in the intellectual gifts. Hence it is the demands of charity, but imperfectly met by faith, that are the *raison d'être* of the intellectual gifts. This is the meaning of St. Thomas here and accords with his teaching that the gifts are so joined together in charity, that no one can have charity without them and no one without charity can have them.[131] So, in a special sense, understanding is a light super-added by grace.

The presence and operations of the gifts seem to be closely connected with foreknowledge and predestination, sufficient and efficacious grace. At the time when sanctifying grace is infused into the soul, the seven gifts of the Holy Ghost are also infused to constitute a perfect super-natural organism ready to be moved by the Holy Ghost in a manner beyond all human consideration. The Holy Ghost working freely activates His gifts in some souls and leaves them dormant in others, "for the Spirit breatheth where He will," as our Lord said.[132] His instinct causes in us an action which is at once free, and therefore meritorious and infallible. That is to say, under His impulse we shall elicit acts which lead to salvation, and so the predestined are infallibly led to their goal. Faith, though it is a light making us see what we are to believe and uniting us to God in knowledge, is, nevertheless, in a deficient human faculty. The cogitation of which we spoke is unsatisfied, and its contrary motions may elude the rule of the will, so causing even the will to falter in its adhesion to God in love. Once the will is shaken, the other obstacles which are always present in man can gain strength and overthrow the subordination of man to God; sin with the loss of grace is the result.

Hence, to heal the deficiencies in the union of the mind to God in faith, and in a sense, to insure that the actions of this mind will procure its salvation, the Holy Ghost must operate in that soul by the light of understanding, or it is lost. "Hence,"

[131] *Summa Theol.*, I-II, q. 66, a. 3. [132] *John*, iii, 8.

as St. Thomas says, "the gift never withdraws from the saints in things necessary to salvation."[133] As Billot pithily puts it:

> . . . from the fact that habitual grace is not only necessary that man in the present state avoid sin, but also sufficient that he operate meritoriously, it does not in the least follow that it is sufficient to avoid sin and to persevere in justice once attained through the whole time of this laborious way . . . and the principal reason is that integrity of nature is not restored by habitual grace . . . Therefore as the Angelic doctor teaches a man in grace needs the aid of actual grace that he be moved by God to act rightly, because of the condition of the state of human nature. There remains a certain obscurity of ignorance in the intellect; we cannot fully know that which is expedient for us, "for the thoughts of mortal men are fearful, and our counsels uncertain." Therefore it is necessary that we be directed and protected by God who knows all and can do all things, which aid is not added to each and every act leading to salvation, but consists in divine instincts by which the mind is illustrated according to inborn needs and the various opportunities or circumstances.[134]

The fifth article[135] is closely connected with this doctrine and might be said to be, next to the first, the most important article in the whole question. We have seen that the gift of understanding is an habitual disposition to receive the illumination of the Holy Ghost; that it is an aid to faith, giving negative evidence about the primary object and positive perfect evidence about secondary objects; that it extends its light to the principles of the moral sphere; that it is in all those in sanctifying grace; and now we have indicated the most profound and essential quality of the gift, its proper act in the strictest sense, which distinguishes it from all other illuminations, inspirations and instincts of the Holy Ghost.

> Unless the human intellect be moved to this that it have a right estimation of the end, it has not yet received the gift of understanding however much of the preambles it may know from the illumination of the Holy Ghost.[136]

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[133] *Summa Theol.*, II-II, q. 8, a. 4, ad 3um.
[134] Billot, *op. cit.*, p. 177.
[135] *Summa Theol.*, II-II, q. 8, a. 5.
[136] *Ibid.*

Because of the pecularity of faith that makes it independent of charity and grace to the extent that it can be present without them, though in an imperfect manner,[137] the question naturally arises whether the gift of understanding can remain without them too. Since its object, the propositions of faith, remains in the graceless soul, why cannot the gift remain too. Just because all who have grace have the gift, it does not follow precisely that all who have the gift have grace.

The principle which is used to establish the negative answer is the one we have just quoted, that is, unless man have a right estimation of his end, he has not the gift, nor sanctifying grace either; therefore without grace there is no gift. The argument is somewhat involved, and the conclusion is the result of two different sets of reasoning.

It is the office of the gift to perfect the soul by rendering it well disposed and easily moveable under the motions of the Holy Spirit; the light of grace which renders the soul movable to know is called the gift of understanding. But when this potentiality to motion is actually moved, just any motion is not sufficient; it must have a particular term to which it is directed. Its final cause is the apprehension of truth; its efficient cause, the Holy Ghost, moves it according to its formal cause, illumination, towards a term which will best serve grace and charity and perfect the soul, and this term is a right apprehension of truth which results in a right estimation of the end, i. e., beatitude with God. It is only a notion which proceeds according to all these causes that can be properly called the operation of the gift of understanding. A right estimation, therefore, is that to which the Holy Ghost most properly moves us in this gift.

The perfection of the soul is also the work of sanctifying grace, inasmuch as grace places man in an order in which he can attain the end in which his ultimate perfection consists, the vision of God. In the natural order, our faculties are only proportionable to our last end, but by grace they are propor-

[137] *Conc. Trid.*, sess. 6, can. 28.

tioned to it. Grace so perfects man that while he has it he cannot err concerning his true end; he always has a right estimation of it. Once he errs, he loses grace, and so this right estimation is only in those who are in grace. St. Thomas, joining these ideas by means of this right estimation of the end which both demand, shows that without sanctifying grace, the gift is lacking.

The objections[138] contain applications of the distinctive note of understanding found in the article. The nature of the specific action of the Holy Ghost in this gift leads almost inevitably to a comparison of the illumination which is the gift of understanding and the illumination which is prophecy. St. Thomas declares briefly that the illumination in prophecy is directed to the matters which were revealed to the prophet, while in the gift of understanding it is directed to a right estimation of the end. Prophecy is not a habit, but a light given in a transient manner to the prophet who acts on principles he does not see and, therefore, he does not need a firm and permanent habit to grasp them. He intends to form a vision either intellectual or imaginary, with certitude, although he has not in himself as clearly seen, the principle whence these visions are derived. Therefore it is fitting that there be communicated to him from the outside a light by which the things he is to prophesy are manifested outside their principle.[139]

The gift, however, and the motion of the Holy Ghost are not given to form some vision whether intellectual or imaginary about the things of faith, but to apprehend and to judge of the credibility and convenience of propositions which are in us habitually through faith. We know that these mysteries are worthy of belief and that any reason for denying them is erroneous, according to the right estimation of our end to which the Holy Ghost moves us. Prophecy is not regulated by faith and is found in infidels and those not in grace;[140] the gift is regulated by principles known under faith, although excited,

[138] *Summa Theol.*, II-II, q. 8, a. 5, ad 3um.
[139] Cf. John of St. Thomas, *op. cit.*, disp. XVIII, a. 2.
[140] *Summa Theol.*, II-II, q. 172, a. 4.

known, and disposed by a special instinct, and is necessary to salvation; therefore it is habitually and permanently given, just as is faith and charity.

In the answer to the third objection,[141] we have the final word on the distinction between faith and the gift of understanding. To faith it pertains to assent solely to principles, to the gift to penetrate them. This is most formal in the two, because pure and precise assent without any discussion, or investigation, or understanding of the intrinsic notes of the object pertains to faith. All the interior things of the object remain so hidden to it that only by reason of extrinsic testimony does it adhere or assent to the proposition of truth, and so it rests in assent. The gift tries to enter into, to penetrate to the interior of a thing, as when the Blessed Virgin asked the angel, "How shall this thing be?"[142] There is no hestitation or doubt here, but the gift is striving for a fuller interior knowledge of mystery, to the extent possible in this life. Therefore, since they proceed from distinct motives and formal reasons, there are distinct habits of faith and understanding.

V. The Essence of the Gift of Understanding

The phrase *right estimation* in all this discussion is liable to confuse a casual reader. In the first place, estimation implies not only judgment, but also a series of judgments wherein one thing is weighed against another, prices compared and finally a price put upon something; for example, it is the essence of charity to estimate its object as of great price.[143] We have denied any sort of judgment to the gift beyond a simple assent to truth. How then is this estimation attained? Here is the whole point of not only the gift of understanding but of the other gifts as well. The man in whom the gifts are operating acts upon knowledge that is not attained by study, or by reasoning, or by any human operation. It is knowledge due

[141] *Ibid.*, II-II, q. 8, a. 5, ad 3um.
[142] *Luke*, i, 34.
[143] *Summa Theol.*, I-II, q. 26, a. 3.

entirely to the Holy Ghost who moves man to attain this true estimate of his end with the simplicity with which natural reason attains first principles. Man is moved to apprehend the truth concerning his end; he sees the terms in which it is expressed.

It is one thing to say that one cannot have a right estimation without the gift of understanding and another to say that one cannot have the gift of understanding without right estimation. The first statement places the gift as a necessary companion of right estimation, even though it does not immediately appear that the gift is the sole cause of the right estimation, unless by further explanation. The second statement places the estimation before the gift, as if to say that the gift is the result of the estimation. Many have so interpreted the way St. Thomas expresses their relation. But there is no more necessary connection between understanding and estimation in the second statement than there is in the first. The words only say that in any subject where the gift is found there will also be a right estimation. The connection between them is not therein expressed. St. Thomas does however give an explanation further on. The motion of the Holy Ghost aids man to apprehend the truth about his end. Therefore, unless the mind be so illumined in apprehending truth that, as a result, it is moved to have a right estimation of the end, it is not precisely the gift of understanding. In other words, understanding, whenever present, produces this effect, right estimation, as well as others like the clear knowledge of particular truths.

It is by accepting the statement, "no gift without right estimation," to mean that the estimation is the cause of the gift, and by joining it with the close relationship to charity that many theologians explain the act of the gift. Vallgornera, for instance, says:

> The gift of understanding does not sharpen nor perfect the mind as a result of study and disputation, and, as it were, metaphysically, but from a certain connaturality and union with divine things through charity. There are two ways we can have a knowledge of and judge of a thing; one way through investigation and study,

the other through experience and a connaturality with it. Just as a philosopher judges of charity in one way from his study of ethics and a discussion of the virtues, while a temperate man judges otherwise, that is from its connaturality to his continence and chastity, in like manner we can have a knowledge and judgment of supernatural and spiritual things either from study and discussion about those things, namely the precise illustration of the truth, or from a certain connaturality and affection, or experience of divine things, as Dionysius said of Hierotheus that he was not only learning but experiencing divine things. One experiences divine things when his affection is moved by the Holy Ghost in such a way that is above that which human modes and rules can measure; for the fact that someone operates from obedience and subjection to the motion of another makes him a patient or a recipient because he is obedient and subject. This is the doctrine of St. Thomas when he says that unless the human intellect be moved by the Holy Ghost to this, that it have a right estimation of the end, it has not yet acquired the gift of understanding, however much it understands the preambles to the faith from the illumination of the Holy Spirit. (*Summa Theol.*, II-II, q. 8, a. 5.). Only the one who does not err about the end has a right estimation of it; he clings to it as the best possible good. This estimation is in only those having sanctifying grace, just as in moral matters a man has a right estimation of the end through the habit of virtue. Therefore the gifts which pertain to the intellect perfect it mystically, that is, affectively and by reason of a certain experimental knowledge and judgment of divine things; this experimental knowledge cannot stand without affection and taste by which divine things are united to us and quasi-connaturalized. The reason is that we cannot philosophize about these gifts except as is given in Scripture, which founds these gifts in some sort of affection and taste, as "Taste and see." (*Ps.*, xxxiii, 9); "A new name written, which no man knoweth but he that receiveth it." (*Apoc.*, ii, 17); "A good to all that do it." (*Ps.*, cx, 10); and ". . . the spirit of the Lord will rest upon him." (*Is.*, xi, 2). Therefore these cognitions, those of the gifts, are founded in the spirit of affection, not in any way whatever, but resting upon and united with us. . . .[144]

This is the substance of all that John of St. Thomas says with much more fire and rhetoric, and following him, most of

[144] Vallgornera, *op. cit.*, n. 560.

the French theologians, especially Gardeil.[145] John of St. Thomas says,

Faith alone and naked leaves us in obscurity, and men therefore become bored and cannot persevere in contemplation of faith alone; they wander, they fall asleep, are bored because faith alone does not contemplate but blindly assents, and the heavens seem more overcast than opened . . . . From this we gather that it is necessary for the soul to break forth from the foggy mist of faith, and run to meet God through the illumination of the gifts of the Holy Spirit by which the mind, as if in golden vestments, is girt about with various colors, i. e., a multitude of spiritual sensations, and multiple knowledge of divine things. But because in this life faith cannot be illumined and shine on the part of the object, since it is always based on testimony . . . it remains for the soul captive in the bonds of faith to be illuminated by the flames of love. Therefore it is fitting that the gifts of wisdom, understanding, and knowledge proceed from love, be based on it, that they might dissolve the mists of faith.[146]

He proceeds then to apply to understanding what St. Thomas expressly teaches of wisdom, and repeatedly says of understanding—that:

the mind is illumined about divine things according as they are sensed within us and according to a connaturality and a certain affective union pertaining to the experience of divine things.[147]

It is a very beautiful and makes excellent reading. It is based in part on the sound teaching of St. Thomas on the connection of the gifts and the nature of the gift of wisdom, but a doubt arises: is it the mind of St. Thomas on the gift of understanding? We are reminded of a remark of Father Ramirez, " One must watch to see whether everything in John of St. Thomas is of St. Thomas, or whether there is not also something only of John." [148]

To say that the gift of understanding penetrates divine

[145] Cf. *art. cit.*, in *Dict. Théo. Cath.* Also: *La Structure de l'ame et l'expérience mystique* (Paris: 1927), II, 221.

[146] John of St. Thomas, *op. cit.*, a. 1.

[147] *Ibid.*, a. 3.

[148] "¿Que es un Tomista?" in *Ciencia Tomista*, XXVII (1923), 183.

truths from a savory taste for them that is connatural seems to contravene the Aristotelian-Thomistic principle: nothing can be willed which is not first known. Further, it is not expressly taught by St. Thomas; indeed, it does violence to what he teaches not only here in the fourth and fifth articles but in the first article and in the Sentences. Finally, not only it is unsupported by his manner of speaking—always applying light and illumination to understanding, and to understanding alone among the gifts—but it contradicts what he expressly said in the Sentences.

The relation of will to intellect, of love to knowledge is one of the corner-stones of the whole edifice of St. Thomas' teaching. Absolutely speaking, the will is inferior to and subject to the intellect because "the object of the intellect is the very reason of the appetible good; appetible good whose ratio is in the intellect, is the object of the will."[149] It is only in a particular consideration where the object of the intellect and will is of a higher order than they, that in willing the object the will becomes ennobled, while the intellect in knowing remains the same, whence the love of God is better than knowledge of Him in this life. But the fact remains that were God not presented to the will by the intellect as a desirable good, He would not be loved. To say therefore that the love which already possesses a thing moves the intellect in some way to know it, is to invert the natural order of the two faculties. To say that we apprehend divine truths from an innate taste which comes from their possession by love is an implausible paradox. To apprehend something in the sense in which it is applied to the gift of understanding is to progress from a state of privation of truth to the state of possession. Just as no one gives what he has not, so no one receives what he already has. If divine truth is already present and sensed, it cannot be acquired by that sense. It is of course quite otherwise with the gift of wisdom whose acts are the application of knowledge already acquired to other things. Its knowledge is affective and not acquired by any

[149] *Summa Theol.*, I, q. 82, a. 3.

study or reasoning, and the Holy Ghost moves it to apply this knowledge to divine and by extension to human things.

If it is objected that faith supplies a sufficient knowledge for charity to start, and that charity outstrips faith in attaining union with God, whence it commands the gifts to search further, the doctrine of the fourth article seems vitiated. The whole argument rested on the one point that because charity needed knowledge with a more perfect light than faith, the gift of understanding was infused to feed charity, not as a consequent to charity, but in the words of St. Thomas, "... the will cannot be rightly ordained to good, unless there preexist some knowledge of the truth." The Holy Spirit "illustrates the mind to know supernatural truth to which the right will should tend." This can hardly be interpreted to mean that the will ordains the intellect to know the truth which it possesses.

It would denote a grave defect in the order of his work, if St. Thomas were to treat of the formal aspect of a gift—as this connatural taste is for John of St. Thomas—[150] not where he is treating specifically of that gift, but thirty-five questions later, under the heading of another gift and expressly applied to that other gift.

Wisdom denotes a certain rectitude of judgment according to the eternal law. Now rectitude of judgment is twofold: first, on account of perfect use of reason, secondly, on account of a certain connaturality with the matter about which one has to judge. Thus, about matters of chastity, a man after inquiring with his reason forms a right judgment, if he has learnt the science of morals, while he who has the habit of chastity judges of such matters by a kind of connaturality.

Accordingly it belongs to the wisdom which is an intellectual virtue to pronounce right judgment about divine things after reason has made its inquiry, but it belongs to wisdom as a gift of the Holy Ghost to judge aright about them on account of connaturality with them: thus Dionysius says that Hierotheus is perfect in divine things for he not only learns, but is patient of divine things.

Now this sympathy or connaturality for divine things is the result of charity, which unites us to God, according to "He who is joined

[150] Gardeil, *La Structure de l'ame*, II, 221.

to the Lord, is one spirit." (*I Cor.*, vi, 17.) Consequently wisdom which is the gift, has its cause in the will, which cause is charity, but it has its essence in the intellect, whose act is to judge aright.[151]

Are not these the very words which John of St. Thomas, without any warrant, applies to the gift of understanding? Even if this connaturality were common to both gifts, it seems more logical to speak of it in connection with the first, and then refer back to it, if necessary. Yet the only thing in common which St. Thomas mentions each time in its proper order, is charity, applying his general doctrine to each gift.

This notion of affective union is to the notion of the gift of wisdom what the notion of light and illumination is to the gift of understanding. In the first article of this question the general notion of what this gift is like is laid down, and likewise in the forty-fifth question. Then, in the second article of both questions, this general notion is developed and limited by comparing it with the virtue to which it is attached, faith and understanding, charity and wisdom. Just as faith rules and measures the light of understanding, so charity rules and measures wisdom by giving it the experience for divine things through which it judges. Is it too much to expect that if this divine experience were also the foundation of understanding there would be some mention of the fact, even parenthetically, in either tract? The only mention of understanding is in one of the objections which tries to show that wisdom is superfluous. The answer is that they have different acts, that is, understanding perceives and wisdom judges—again that contrast between motion toward knowledge and motion away from knowledge already gained and toward other things.

St. Thomas consistently speaks of wisdom as a judgment, the application of something known to something else, but he always speaks of understanding as a light, the Holy Spirit illuminating the mind. Nor does he ever interchange the terms. Nowhere in the tract on the gift of wisdom is there any mention of illumination except in relation to understanding and nowhere

[151] *Summa Theol.*, II-II, q. 45, a. 2.

in the tract of the gift of understanding is there a mention of connatural experimental taste. Light, illumination, illustration, are the terms always applied to understanding—" supernatural light, . . . the light superadded is to supernatural things, as the natural light to first principles." [152] " Understanding illumines the mind concerning things learned "; [153] " so also the Holy Ghost illumines the mind. . . ." [154] " Intellectual light of grace is called the gift of understanding . . . not yet attained the gift, no matter how much from the illumination of the Holy Ghost . . . ; . . . it is not illustration of the mind concerning a right estimation." [155]

We have in the commentary on the Sentences certain expressions which reveal that here at least St. Thomas did not agree that taste enters into the gift of understanding. Because of the order of the master of the Sentences, wisdom is treated first and is followed by understanding. Note that his doctrine on wisdom has not been changed in the Summa.

> . . . the gift of wisdom has an eminence of knowledge through a certain union with divine things with which we are not united except through love, as he who adheres to God is one spirit with Him. . . . Wisdom presupposes dilection (the act of charity) as a principle and so is in the affection, but as to its essence it is in knowledge; whence its act here and hereafter seems to be to contemplate divine things, and then through them to judge of others, not only in speculative, but also in practical matters, in which judgment is taken from the end, and therefore against wisdom is folly which implies an error about the end.[156]

Thus is, briefly and beautifully expressed, the nature of the gift of wisdom. Now, the next question is to consider understanding, and he says, as we have seen, that it is the gift which illumines the mind about things heard after the manner of first principles. Then the objection is raised that wisdom experiences delight about divine things, but so does understanding; therefore they are not distinct. He answers that

[152] *Ibid.*, q. 8, a. 1.
[153] *Ibid.*, a. 2.
[154] *Ibid.*, a. 4.
[155] *Ibid.*, a. 5.
[156] *III Sent.*, d. XXXV, q. 2, a. 2, qt. 3.

any delight in understanding is a natural one caused by the congruity of the operation to the faculty operating; *not however from a love of those things* concerning which the operation is, *as in wisdom.*

His general comparison of the two is this:

Understanding names a simple apprehension; but wisdom is a sort of fullness of certitude to judge about what is apprehended, and therefore understanding pertains to the way of invention and wisdom to the way of judgment. But because judgment cannot be concerning things apprehended except through supreme causes, to which the wise man is united in mind, which union to divine things is through love; therefore, wisdom is principally concerned with divine things and has in them a delight caused by dilection. Understanding on the other hand is indifferent concerning all apprehended spiritual things, and in itself it implies, *no delight from the love of the things* apprehended.[157]

For St. Thomas, then, however much the gift of wisdom may involve an experimental taste of the divine, the gift of understanding has none of it, except perhaps as a secondary effect of its operation. Understanding is, rather, a disposition by which man, under the illumination of the Holy Ghost, penetrates the propositions of faith and judges of their truth.

It is interesting to note what St. Albert taught on this matter of the essential characteristic of understanding. Even though he was St. Thomas' best loved teacher, it would be folly to argue that since he taught Thomas and his doctrine is thus and so, therefore it is that of St. Thomas too. We know of too many divergencies in their thought to permit so groundless an argument. In this case, St. Thomas seems to agree with the simple forceful language of his saintly master. St. Albert, after exposing the nature of the gifts, raises the objection that on the authority of St. Augustine it seems that the office of the gift is to know God and to love and embrace Him, and therefore it is no different from wisdom. The answer is that

although it has charity as a mover inasmuch as charity is the general mover in every good, nevertheless, it differs from wisdom,

[157] *Ibid.*

because wisdom is in the taste (*gustus*) of goodness, as is often said, but understanding is in the contemplation of truth alone.[158]

In his *Compendium of Theology*, he says,

Wisdom and understanding differ because . . . by understanding God is known through illumination of things heard in Holy Scripture; by wisdom He is known by experiment. Likewise, through understanding we know God; by wisdom we taste his sweetness . . .[159]

The two great masters then, are agreed on this, at least, that the knowledge of the gift of understanding is not affective but directly caused by the illumination of the Holy Ghost.

VI. Understanding Distinct from Other Gifts

Enough has been said about the objects and acts of the gift of understanding to permit a discussion of its distinction from the other gifts of the Holy Ghost. Briefly the gifts are seven in number: wisdom, a right judgment of divine things according to a certain connaturality with them;[160] understanding, a penetration and a grasp of the things to be believed;[161] knowledge, a certain judgment about revealed truths;[162] counsel, the immediate direction of God about those acts which lead to salvation;[163] fortitude, a firmness to overcome all obstacles and dangers in finishing the work we have begun;[164] piety, the filial affection for God;[165] and fear of the Lord, a reverence and subjection to God.[166] These are the seven habits which perfect all the faculties of the soul by making them sensitive and docile to the special inspirations of the Holy Ghost. Let us recall what was said in the introduction about St. Thomas' norms for distinguishing habits. There are three ways: by their active

[158] *III Sent.*, d. XXXV, a. 10, ad 4um. *Opera Omnia*, XXVIII, 656.
[159] *Compendium Theologicae Veritatis*, lib. V, c. 46. This work has been attributed to Hugh of Strassburg, a disciple of Albert.
[160] *Summa Theol.*, II-II, q. 45, aa. 3 and 4.
[161] *Ibid.*, q. 8, a. 2, Sed Contra; a. 6.
[162] *Ibid.*, q. 9, a. 1.
[163] *Ibid.*, q. 52, a. 1.
[164] *Ibid.*, q. 139, a. 1.
[165] *Ibid.*, q. 121, a. 1.
[166] *Ibid.*, q. 19, a. 9.

principles, by the subjects of inherence, and by their formal objects.[167]

Now, obviously, the active principle is the same in all the gifts—the Holy Ghost. So, only the two remaining ways will avail us here. St. Thomas proceeds to apply the second rule and so separates understanding from fortitude, piety, and fear of the Lord, because they by definition pertain to the appetitive faculties of our nature. In view of the difficulty to come, he cannot resist a human remark. This is manifest, says he, " but the difference of this gift from the other three which perfect the cognoscitive power is not so manifest." [168]

There were some who sought to further distinguish the intellectual gifts according as they perfected the speculative or the practical part of man's intellect, and among them, St. Thomas himself was to be found for a time.[169] But, meditation on the extensive part that faith plays in our lives led him to change his teaching so as to permit understanding to be practical [170] in a sense, and knowledge to be speculative.[171]

The basis then for the correct distinction of the intellectual gifts, will be, not their subject, but their formal objects which are found in the supernatural knowledge of faith. Faith is, after all, the ordinary means of knowing God in this life. Special revelations and divine touches are not for all, but only for those whom God chooses to lead in this extraordinary way. The gifts are common to all the just, and so according as they assist and perfect different aspects of faith will the gifts be distinguished.

St. Thomas recapitulates the essentials of faith: that it is an assent to things not seen, but heard; [172] that it is principally concerned with God as first Truth; [173] secondarily with certain creatures; [174] and finally, that it extends to the direction of human works [175] according to the Apostle's " Faith worketh by charity." [176]

[167] *Ibid.*, I-II, q. 54, a. 2; q. 18, a. 2.
[168] *Ibid.*, II-II, q. 8, a. 5.
[169] *Ibid.*, I-II, q. 68, a. 4.
[170] *Ibid.*, II-II, q. 8, a. 3.
[171] *Ibid.*, q. 9, a. 3.
[172] *Ibid.*, q. 1, a. 4.
[173] *Ibid.*, a. 1.
[174] *Ibid.*
[175] *Ibid.*, q. 4, a. 2 ad 3um.
[176] *Gal.*, v, 6.

On the part of the things proposed to faith for belief, two things are required from us; first, that these things be penetrated or grasped by the intellect, and this pertains to the gift of understanding; secondly, it is necessary that man should judge these things aright, that he should consider these things to be embraced and their opposites avoided. This judgment, when it concerns divine things, belongs to the gift of wisdom; if concerned with created things, it pertains to the gift of knowledge; finally, if applied to individual actions, it comes under the gift of counsel.[177]

Therefore to each essential point of faith, there is attached a special gift.

Had we not noted and discussed them, the problems raised by having understanding direct human affairs and produce a right estimation would make the distinction of the gifts here not so manifest. But, to repeat, understanding extends only secondarily to human affairs, inasmuch as it furnishes a grasp of the supernatural principles and laws governing them, the actual regulation of which is left to wisdom and counsel. Understanding produces a right estimation, as Cajetan says:

because this estimation, and any other judgment, as regards perception, looks to the gift of understanding; as regards judgment it looks to wisdom or knowledge or counsel, just as assent looks to faith.[178]

In the answer to the first objection, St. Thomas gives another way of distinguishing the gifts among themselves which was very common in his time—according to the vices which they opposed. This is the method of St. Gregory, and after him of some of the early Scholastics. The vice which is opposed to understanding is dullness, the opposite of sharpness. An intellect is said to be sharp when it is able to penetrate to the heart of things proposed to it. This is another similitude drawn from the sensible order. The eye is said to be sharp when it sees its object at a distance or is able to penetrate the smallest details. So it is with the intellect. Its object is, in a way, distant from it; it must know essences through the medium of properties, and causes through their effects.

[177] *Summa Theol.*, II-II, q. 8, a. 6. [178] *Comm. in II-II*, q. 8, a. 6.

Consequently, a man is said to have an acute sense in connection with his understanding if, as soon as he apprehends a property or effect of a thing, he understands the nature of the thing itself, and if he can succeed in perceiving its slightest details; whereas a man is said to have a dull sense . . . if he cannot arrive at knowing the truth about a thing without many explanations; in which case, he is unable to obtain a perfect perception of everything pertaining to the nature of that thing.[179]

Folly is a perverse judgment about the common goal of life, and is opposed to wisdom. Ignorance is a particular defect, and is opposed to knowledge. Precipitancy is action without sufficient deliberation, and is opposed to counsel. Here we have the natures of the various gifts well marked out by contrast, and the penetration of understanding emphasized.

A difficulty crops up again concerning faith. In the natural order, the one habit of intellect suffices to apprehend first principles and to assent to them, therefore in the supernatural order, since the articles of faith are its first principles [180] faith alone is sufficient to penetrate and assent, and therefore the habit is superfluous. We deny the parity. The habit of intellect is a perfect participation of the natural light of reason, and is able to do both, but faith is an imperfect participation of divine light, and cannot do both without divine aid.[181] It belongs to faith to assent to that knowledge conferred by grace, but it belongs to understanding to pierce in a supra-human way, the things that are to be believed.

If the gift of understanding is both speculative and practical, it seems common to all the gifts, and therefore is not really distinct from them. The answer is that, while it is related to both speculative and practical knowledge, it formally looks to apprehension in them and not to judgment. But, we have already said that there is also a judgment in understanding, and so the difficulty stands. The judgment in understanding, however, is a discerning judgment which penetrates truth by separating it from error and falsehood, but the judgment in the

[179] *Summa Theol.*, II-II, q. 15, a. 2.
[180] *Ibid.*, q. 1, a. 7.
[181] Cf. Sylvius, *Comm. in II-II*, q. 8.

other gifts is an analytic sort of thing resolving things by their causes, and it is this analytic judgment that St. Thomas denies to understanding.

In judging things, we can proceed in two ways; first, by a resolutive or analytic judgment, when we judge of things through their causes or their effects, by resolving and reasoning upon them; the other way, by a simple discretive judgment, by which we judge that this is not that, or is not as that is, but has a different relation to that, which can be done through some comparison or reflection as does the intellect, or in a simple way as the senses, discern sounds and colors, etc. The gift of wisdom has a judgment concerning spiritual and supernatural things in a resolutive and analytical fashion through their highest causes, i. e., through an intimate union with God; knowledge, moreover, through inferior causes or effects, inasmuch as it considers creatures—faith judges an assent neither through causes or effects, but from the naked testimony of the teller.

The gift of understanding judges neither by resolving nor by reasoning about supernatural truths from causes and by causes, but from a certain illumination of the Holy Spirit it discerns spiritual from corporeal things, at least in a negative way, and it separates from error things to be believed as true. For this judgment the evidence of argument is not required, because it does not proceed through causes or effects; nor is there required a resolution of conclusions into their principles, because the gift like the habit of first principles is concerned with principles. It forms this judgment from the better and more acute penetration of the terms from which these truths are composed and their convenience among themselves and the inconvenience of errors. In natural things there are certain principles known to all and others known only to the wise because their terms are not easily penetrated by all, but only by the more acute, as, e. g., that spiritual substances are not in place, and that there are not many gods, because the perception and penetration of these terms depends on a comparison and collation with their opposites. Yet, nevertheless, the judgment of these principles is not made through collation and arguments, but from a pene-

tration of the terms brought about by comparison and collation. In like manner, by the impulse and illustration of the Holy Spirit the gift sharpens and elevates the mind to seize and penetrate the terms by which supernatural truths of faith are proposed, and from such penetration judges those truths to be believed, and rests in them.

To the objection which is made from the words of St. Thomas [182] according to which wisdom and knowledge exclude argument, and therefore the gift of understanding cannot differ from them according as it is discretive and they discursive, John of St. Thomas replies,

> Admitted that the gifts of wisdom and knowledge are not discursive, there remains a difference between wisdom and understanding, because understanding is discursive neither on the part of the thing known nor on the part of the way of knowing, i. e., the knower, because it proceeds about principles by penetrating and apprehending them from a knowledge of the terms, and so the things known are not subject to argument, from the manner of knowledge it does not proceed in a resolving manner, but by a simple judgment apprehends the truth. But wisdom and knowledge proceed in a resolving manner at least on the part of the things known, because they proceed from causes, giving an account of the truth they know; although on the part of the knower they proceed without arguments—just as the angels have resolutive knowledge, inasmuch as on the part of the object they know things through their causes, although on the part of the knower they do not form arguments from many acts but by one act know cause and effect.[183]

So, the gift of understanding remains distinct from all the others because it apprehends, grasps, and judges of divine truths, after the manner of first principles.

Speaking of the vices opposed to the gift,[184] St. Thomas also mentions blindness of mind, and indicates there the dispositions and, indirectly, the circumstances which are most propitious for the operation of this gift. Blindness of mind is a privation of the principle of intellectual vision which is threefold: the light

[182] *Summa Theol.*, II-II, q. 8, a. 1, ad 1um.
[183] John of St. Thomas, *op. cit.*, dis. XVIII, a. 4.
[184] *Summa Theol.*, II-II, q. 15.

of reason, the light of grace, and intelligible princples through which a man understands other things. The first is never forfeited by the soul; the second is, sometimes, but its privation is a punishment rather than a sin; it is in the loss of the third that sin enters. Blindness of mind is opposed to the gift, and St. Thomas asked if is it a sin. This is the answer:

> That man does not attend to an intelligible principle whence other things are known happens in two ways. Sometimes it is due to the fact that a man's will is deliberately turned away from the consideration of that principle . . . whereas sometimes it is due to the mind being more busy about things which it loves more, so as to be hindered thereby from considering this principle. In either of these ways, blindness of mind is a sin.[185]

In a further article, he shows how this vice, and that of dullness, arises from carnal sins of lust and gluttony.[186] Hence, the dispositions for the operation of this gift on the part of man are abstinence and, above all, chastity. Further, from his consideration of conversion and aversion of the mind to some intelligible principle—some article of faith perhaps—it is evident that without such conversion, the Holy Ghost will not activate the gift. He accommodates Himself to the order of nature, and takes occasion to act in us from some external circumstances which turn our thoughts to things of God, from the reasonings we form in meditation, from hearing the word of God preached, from spiritual reading, from all actions which affect us well or ill, and above all in prayer.[187]

VII. The Gift in Heaven

One question remains to be considered before we can apply ourselves to summarizing St. Thomas' doctrine on the essential nature of the gift of understanding. He does not consider it here expressly, but the principles of a satisfactory solution can be gathered from other places in his writings. The question as already stated is what act, if any, does the gift exercise in heaven where it is found without faith.

[185] *Ibid.*, a. 1. [186] *Ibid.*, a. 3. [187] Billot, *op. cit.*, p. 188.

St. Thomas seems to teach that the gift of understanding becomes the light of glory, because he attributes the perfect vision of God in heaven to the gift.

> Vision is twofold: one is perfect whereby God's essence is seen; the other imperfect. . . . Each of these visions of God pertains to the gift of understanding; the first to the gift in its state of perfection as possessed in heaven, the second to the gift in its beginnings as it is possesssed by wayfarers.[188]

He expressly speaks of vision whereby we see the essence of God as pertaining to the gift, but only the light of glory can elicit the vision of God; therefore the gift and the light of glory seem to be the same. Again he says:

> the gift of understanding whose office it is to apprehend spiritual things in heaven, stretches to the essence of God, by intuiting Him.[189]

Is it not the light of glory which alone touches the essence of God by intuiting Him?

> Those gifts which have an object which in common with a virtue will remain in heaven will not remain distinct from those virtues from which they are distinguished only in imperfection and perfection of mode of operation, as is evident in faith and understanding, because the vision which succeeds faith pertains to the perfect gift.[190]

In other words, the gift in heaven is no different from the habit which effects the divine union, i. e., the light of glory.

In spite of all this, we must say that in heaven the gift remains distinct from the light of glory, although it is regulated by it and the beatific vision. In this life, as we have seen, the gift is regulated and measured by faith, because by faith we are joined to truth, moved to believe by divine testimony, and illumined by the Holy Ghost to penetrate what we believe and to discern it from error. In heaven vision succeeds faith and therefore the gift will then be regulated by vision. In this life, understanding does not elicit the act of belief; in the next it will not elicit the vision. It presupposes the mind united to

[188] *Summa Theol.*, II-II, q. 8, a. 7.
[189] *III Sent.*, d. XXXIV, q. 1, a. 4.
[190] *Ibid.*, d. XXXII, q. 1, a. 3, ad 6um.

God in some way, that the Holy Ghost may find it docile to be moved to understand the mysteries concerning Him.

The gifts are compared to the theological virtues through which man is united to the Holy Spirit who moves him (in the gifts) as the moral virtues are compared to the intellectual virtues through which is perfected reason, the mover in morals.[191]

The gift, in its formal aspect, abstracts from faith or vision; it remains a disposition to be moved by the Holy Ghost to penetrate truth.

St. Thomas has a special article on whether the gifts will remain in heaven,[192] and answers that according to their essence they will be most perfect in heaven, because they perfect the mind to follow the instincts of the Holy Ghost, and in heaven man will be totally subject to God. Hence in heaven the gift will be regulated by the Vision. According to the matters in which they operated, they will not be found in heaven. Answering an objection, he remarks that the illumination of the mind will remain as the gift of understanding. However, the vision of God is not that by which we follow the instincts of the Holy Ghost, but rather that by which we possess, and are united to, Him. Therefore the gift and the light of glory are distinct.

Moreover, in Christ we find all the gifts, and the light of glory as well, and so, obviously, the light of glory and the gift are distinct. It cannot be objected that the gift and the light of glory are distinct in Christ only because he was at the same time wayfarer and comprehender, but in ordinary wayfarers there are seven gifts and in comprehenders the light of understanding becomes the light of glory. The gift of understanding was either an obscure light repugnant to one in glory, or an evident and clear light. If obscure, it could not be found in Christ, as neither faith nor any imperfection in knowledge can be ascribed to Him. If clear and evident, there is no reason why the gift could not remain even after He ceased to be a wayfarer just as His infused knowledge remains, because it is perfect in itself and not repugnant to the light of glory.

[191] *Summa Theol.*, I-II, q. 68, a. 8. [192] *Ibid.*, a. 6.

As for the expressions cited by some from St. Thomas, to show that the light of understanding becomes the light of glory, we understand them in the light of what St. Thomas has taught on the subjection of the gifts to the theological virtues. The perfect vision of God's essence belongs to the gift, not that the operation of the gift is the cause of the vision, but inasmuch as, after the vision is obtained, the gift can operate in all its perfection, no longer hindered by faith, but now regulated only by the clear vision of Infinite Truth which succeeded faith. The other two texts are to be understood in the same way, not formally but as consequences of the very vision itself. For St. Thomas says:

> The gifts which perfect us in the contemplative life, [wisdom and understanding] will remain as to the acts which they had about their proper matter, but they will be perfected as to their mode, because no matter how much they were elevated in this life, they could not attain the heavenly mode. [193]

So, just as with the gift of understanding, the Holy Ghost moves us to penetrate the mysteries of faith in an imperfect manner in this life, so in the contemplation of the essences of God as He is, the Holy Ghost will move us to see at last perfectly those things which escaped us here. "Now this is eternal life, that they may know Thee, the only true God." [194]

Conclusion: The gift of understanding is a habit which renders us prompt to follow the impulse of the Holy Ghost. It is found in all who are in the state of sanctifying grace, and in them only. The essential notion of this gift is that in it the Holy Ghost illumines us by his light to penetrate and to judge with a simple assent the primary objects of faith imperfectly, the secondary object perfectly; not by any connatural taste but by directly strengthening our intellectual light; and by this it is distinguished from all other gifts.

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[193] *III Sent.*, d. XXXIV, q. 1, a. 3.

[194] *John*, xvii, 3.

SOLUTION OF THE PROBLEM OF SPECIES *

I. INTRODUCTION

1. In the opening pages of *Problems for Thomists: The Problem of Species*,[1] I distinguished two senses in which philosophers use the word "problem": either "to signify an open question, an issue or dilemma not yet demonstratively resolved," or "to mean a question to which several contrary answers have been given, among which we are able to discriminate the true from the false." [2] Strictly speaking, the latter is a *solved* problem, and as solved it is no longer a problem for purely philosophical inquiry. It may, however, remain a problem for the philosopher in his role as historian of thought. There is both philosophical and historical interest in trying to account for the origin and persistence of theories we know to be false. But in the case of the *unsolved* problem, the primary aim is philosophical: it is to resolve an issue constituted by conflicting theories, each of which is possible, and neither of which is known to be true.

I proposed the problem of species as a problem for philosophical inquiry because I thought I had found an unresolved opposition between two theories about the number and order of species, as these matters are discussed in the philosophy of nature. Let me report at once the formulation which I made of this issue. With respect to the number of species (the number of specific distinctions among corporeal substances), the issue was between a first theory which supposed a small and definitely known number (more than three and less than ten), and a second theory which supposed a larger and not definitely known number. With respect to the order of species, the issue was between a first theory which affirmed a perfect hierarchical ordering but denied, in doing so, the presence in two proximately related specific natures of a common generic element; and a second theory which denied a perfect hierarchical ordering but affirmed the presence of a common generic nature in diverse species.[3]

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* An analytical outline of this article will be found on pages 378-9.

[1] For brevity, I shall hereafter refer to the book as *The Problem of Species*. I shall also have to assume that the reader of this article is somewhat familiar with matters under discussion in the book (New York, 1940), or in the series of articles published in THE THOMIST (Vol. I, Nos. 1, 2, 3; Vol. II, Nos. 1, 2).

[2] *Op. cit.*, p. 1; THE THOMIST, I, 80.

[3] This summary of the issue is, of course, too brief to be adequate. For a full summary, vd. *op. cit.*, Chap. VI; THE THOMIST, I, 431 ff. It must suffice here to point out that there is a connection between what each theory holds about the

The problem which I proposed as philosophical no longer seems to me to be a problem of that sort, because I now think that the issue between the two theories can be completely resolved. To state my present view more accurately, I should say that the questions about the number and order of specific natures can be demonstratively answered. This is more accurate because the issue cannot be resolved in favor of either theory *as previously formulated*. I might describe the situation as I now see it in either of two ways: (1) by saying that there is a third theory which is able to combine the truths contained in the first and the second theory and, at the same time, excludes their errors—a sort of Hegelian synthesis of the half-truths contained in thesis and antithesis; (2) by saying that the first theory contained an accidental error, the rectification of which permits it to be proved, whereas the second theory is essentially erroneous and can, therefore, be completely disproved. Only the second of these two statements is really accurate, and therefore I must describe the situation in that way. The reader will see this to be the case when, later, he sees that the error made in the formulation of the first position is appropriate, but *not essential*, to its disagreement with the second position, so that when the first position is rectified by the removal of this error, it still differs from the second position on critical grounds. In contrast, the error in the second position is essential to its disagreement with the first position; hence, should that error be removed, the second position would be reduced to the first, in which case, of course, the problem would be solved, for there would no longer be an opposition of conflicting theories, but only one true account of the matters under consideration.[4]

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number of species and how it views their order. This is made plain in the exposition of the two theories in Chapters IV and V respectively. One other point needs to be made explicit: the second theory does not deny hierarchy in every sense, but only that *perfect* hierarchical order in which each member is specifically distinct from its proximate inferior or superior; thus, if *oyster* and *cow* are species of a generic *brute* nature, and along with other species of *brute* differ generically from *man*, the hierarchy of species is *imperfect*, even if all the species of *brute* are perfectly ordered *inter se*, for the highest of the infra-human animals would not differ specifically from man, but only generically.

For brevity, I shall hereafter refer to the "first theory" and the "second theory," or the "first position" and the "second position," assuming that the reader will remember the essential points of opposition thus being indicated.

[4] In the book I considered the possibility of a third theory, combining the answer given by the first theory with regard to the ordering of specific natures, with the answer given by the second theory with respect to their number. Vd. fn. 167, p. 142; THE THOMIST, I, 440, fn. 167. But I now see that a third theory, *so conceived*, is impossible. The number of species which can be affirmed is limited by the principle of a perfect hierarchical ordering, which is the chief principle of the first theory.

It is also true to say that the issue, as I stated it, between the first theory *unrectified* and the second theory is a false issue. It is not surprising, therefore, that this false issue should have appeared to be irresolvable. *It was irresolvable because it was false.* If a man propounds a false problem, he cannot hope to solve it. It does not follow, of course, that every true issue is resolvable, for there may be some genuine problems which we cannot solve. But, fortunately for the philosophy of nature, the problem of species does not belong with the mysteries. When the true issue is stated, as between the second theory and the first theory *rectified*, that issue can be completely resolved in favor of the correctly formulated first position.

Though the issue between the rectified first theory and the erroneous second is a true issue, in the sense that there is always an issue between truth and error, the problem of species is no longer a genuine problem for the philosopher of nature *as such*. All that remains of the problem now belongs to historical research in philosophy, for it is still worth while to explain, if we can, the origin and persistence of the false notions constituting the second position. Such historical explanations have philosophical value in so far as they help the philosopher to understand the truth better by knowing the causes of error.

2. It is not often that one achieves a clarification of intellectual difficulties so speedily and so completely. In so far as, in formulating the first position, I made the error which generated a false issue, I am, of course, responsible for some of those difficulties; but may I say, in partial extenuation, that I made this error in the course of working toward a true issue? If I had not been working in this direction, I might not have made the error; but then I also might not have discovered the true theory, made evident by a demonstrative resolution of the true issue. In short, there are real difficulties, not of my making, in the second theory of species—a theory of ancient origin, as well as currently prevalent. In one sense, there was no problem for Thomists in these questions about the number and order of species, because the true answers to these questions constitute a thoroughly Thomistic theory; but, until the true answers be demonstrated and the errors in the second position uncovered, there was and is a problem here for any Thomist who adheres to the second theory, because the difficulties intrinsic to that theory arise from its conflict with fundamental Thomistic truths.

I can take the blame for having made an error, but I cannot take credit for its discovery. I owe, and wish to record, a debt of gratitude to those critics who, through really trying to understand the

problem as I saw it, helped me to discover the error, thus enabling me to correct it and to reach the clarification and solution I am now about to present. Viewed objectively, it would have been better not to have made an error, but viewed subjectively, making this error became the occasion for a surer realization of the truth of the first position. And this course of events may be fruitful, not only for me, but for others who will learn from this adventure in thinking and discovery something about the constraining and regulative beneficence of basic Thomistic principles. There is no better sign of the objectivity of truth in a philosophy than the common obligations it imposes upon everyone who works under its aegis.[5]

3. Let me name the error at once. It consisted in *denying* a common generic element in two specific natures, proximately related as higher and lower; it consisted, furthermore, in regarding this denial as *essential* to the principle of a perfect hierarchical ordering of specific natures. As I originally formulated it, the first position contained this error. This error was called to my attention by the critic who asked how *animal* could be predicated of both *man* and *brute,* or of both *man* and *cow.* If I tried to answer this question in a manner quite consistent with my erroneous formulation of the first position, I would have to say that *animal* is predicated of *man* as genus, and of *cow* as species, for according to the first position, as unrectified, the sensitive nature, which is the generic element in human nature, is indifferently conceived by *animal* or *brute;* and since *cow* is merely a race or sub-species (an accidental concretion, not an essence) of *brute, animal* or *brute,* indifferently, signifies the whole specific nature of *cow.* My critic could then reply that if this account of the predication of *animal* be essential to the first position, then that position must be essentially erroneous, because it is impossible for one concept to be predicated of two others, both its inferiors, in the one case as genus, and in the other as species.[6]

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[5] If I had not violated a Thomistic principle, I would not have made the error which prevented me from seeing the unblemished truth at once. Since I made the error willingly, I was at fault, even though I may try to excuse the willful blindness by the excessive zeal with which I tried to adhere to a new truth I had just begun to see. I might almost say that what blinded me was the brightness of the new light. Though it in no way exonerates me, it is necessary to add that those who adhere to the second theory are guilty of the same fault—a violation of Thomistic principles. I hope that they, on their side, will also be able to profit from the insights consequent upon the rectification of my error.

[6] This critic was Professor Anton Pegis of Fordham University. In conversations which we had, he insisted that he was raising not merely another objection to Position I, to be added to the seven others which I myself had raised, and five of which I showed to be completely answerable. Vd. *op. cit.,* Ch. VIII; THE

A second error followed; or, perhaps, we can regard the mistake I am now going to report as part of one and the same error. I thought that the first position had to deny a common generic nature, in order to hold to a strict hierarchy of specific natures; but I also realized that the logician's account of predication and of the ordering of concepts required the notion of a common genus. The logical account of species and genera seemed to me to be one which the first position had to acccept, as well as the second. Hence I was led to the false conclusion that whereas the second position could affirm a common genus in logical analysis and a common generic nature in the philosophy of nature, the first position could only affirm a common genus in logical analysis. I made this an essential point of difference between the two theories; and I formulated this difference by saying that, according to the first position, there was no "parallelism" between logic (concerned with the ordering of concepts) and ontology (concerned with the order of natures).[7] This obliged me to distinguish between two types of hierarchy: the "logical hierarchy" of concepts, in which there were common genera; the "ontological hierarchy" of natures, in which there were

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THOMIST, II, 106. Failure to meet this objection did not merely make the first position *less likely to be* true (which was the way I regarded the failure to meet the sixth and seventh objection against the first position); rather, he insisted, failure here was tantamount to the complete untenability of the first position. I now know that he was quite right, although at the time the difficulty he raised about the predicability of *animal* seemed to me to be necessitated by the most important point in the first theory—the very point in which the first theory seemed to adhere to a truth which the second theory violated, namely, that between *man* and the proximately inferior specific nature, whatever it be, only one essential perfection exists as the basis of the specific difference. I shall subsequently show how this truth can be preserved without committing the error Prof. Pegis detected.

I must add that in the course of writing the book, I was somewhat aware of the difficulty which Prof. Pegis later discovered. Vd. *op. cit.*, fn. 153a, p. 123; and fn. 189, p. 218; THE THOMIST, I, 421; II, 189. I realized that I was departing from tradition in trying to use the word "brute" to name the generic nature of man; and I realized that, however I might justify such verbal usage, I could never regard the concept *brute* as a genus predicable of *man*, for *rational brute* is a false definition by self-contradiction. Yet, at the same time, I was unable to find a real distinction between what was intended by the concept *animal*, and what was intended by the concept *brute*, in terms compatible with the principle of a perfect hierarchy. Hence, in adhering to that principle, I felt I had to accept the difficulty of not being able to explain the facts of predication.

[7] It will be seen at once how this mistake flows as a consequence from the initial error of denying a common generic nature. I made it obviously as a result of trying to adhere at once to two inconsistent principles: the principle of predication, on the one hand, and the principle of perfect hierarchy *erroneously conceived*, on the other. Cf. fn. 6 *supra*.

no common generic elements.[8] These mistakes were called to my attention by the critic who charged me with violating some fundamental Thomistic canons about the relation of *ens naturae* and *ens rationis* within the analogy of being, such as *verum sequitur esse rerum,* or that the modes of predication follow the modes of being. As made, the charge was inaccurate on only one point: what should have been said was that the first theory, as I conceived it, was guilty of these violations, and hence could not be at all tenable within the framework of Thomistic philosophy. All that the critic need have said was that the sharp discrepancy between a logical and an ontological hierarchy, apparently demanded by the first position, showed that the theory was impossible for a Thomist.[9]

I have now stated the error, the correction of which has such fruitful results.[10] It might be thought that the force of the criticisms I have just mentioned would destroy the first position and leave the second in undisputed possession of the field; or it might be thought that the correction of the error indicated by these criticisms would reduce the first position to the second, thus coming to the same

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[8] All of these errors, or parts of the same error, will be found explicitly enunciated in the summary of the main points of the first position as contrasted with the main points of the second. Vd. *op. cit.*, Ch. VI; THE THOMIST, I, 381 ff.

[9] This critic was Father Gerard Smith of Marquette University. In a review of my book, which appeared in *Thought* (Dec., 1940: XV, 59, pp. 710-12), he obviously intended the criticism I have reported in the text; but I must confess that I did not get the real point of his review until after many letters had passed between us; in full truth, I should say that I did not get Father Smith's point until I was able to see it in the light of Prof. Pegis's criticism. Just as the several mistakes I have mentioned are parts of one error, so the points Father Smith and Prof. Pegis made separately are really parts of one and the same fundamental criticism. The inadequacy of my understanding of Father Smith's criticism—at a time when I had not yet perceived the error in my formulation of the first theory—is plainly revealed in a note I wrote on Ontology and Logic, in reply to Father Smith. Vd. *Thought,* March, 1941; XVI, 60 pp. 200-4.

[10] I may have made other errors than this one, but so far as I can now see this is the only one which is relevant to the issue between two theories, in the philosophy of nature, about the number and order of substantial species. It was this one error which made the issue as I stated it a false issue; it is the correction of this one error which makes the issue not only true but resolvable. The question about the constitution of the essences of composite substances—which really is concerned with the precise way in which the notion of "common matter" must be interpreted, when it is said that common matter enters into the composition of such essences—is not relevant in the same sense, i. e., as determining a correct formulation of the issue, or its resolution. I think I have sufficiently shown why this is so (Vd., *op. cit.*, pp. 14-17, and 168-176, esp. fn. 174; THE THOMIST, II, pp. 108-116, esp. fn. 173, p. 110); and M. Maritain agrees that the fact that I have postponed this question for later discussion is not a relevant point of criticism with regard to the issue about species (vd. "Concerning a 'Critical Review'" in THE THOMIST, III, p. 49).

result—namely, a solution of the problem in terms of accepting the second theory as true. But neither of these two "possibilities" is in fact the case, *precisely because the error is not essential to the formulation of the first position, especially not with respect to the very points on which its essential disagreement with the second position is based.* On the contrary, far from destroying the first position, these criticisms have led to the correction of an accidental error; and far from this reducing the first position to the second, the correction rectifies the first theory in the line of its own essential truth, confirms it in its opposition to the second position, and resolves the issue by showing why the second theory must be rejected, and the first accepted.

4. Though I shall postpone until later an argumentatively adequate statement of the resolution, let me say at once how the correction came to be made, and how it is to be understood. Merely seeing the difficulties in my formulation of the first theory was, by itself, not enough. The criticisms which pointed out these difficulties could never, by themselves, have made me regard the *difficulties* as *errors,* for three reasons: in the first place, I saw an element of truth in the first theory which I could not surrender; in the second place, I saw that this element of truth was incompatible with points in the second theory; in the third place, I saw difficulties in the second theory which seemed to me as insuperable as any which attached to the first theory, if not more so. In this state of mind, I could not give up the first theory in spite of its difficulties, nor could I accept the second, because it had difficulties of its own. My criterion of judgment was simply this: until all the difficulties attaching to one theory could be removed, and until those attaching to the other could be shown to be incurable errors, no resolution of the issue would be possible.

In this state of mind, I entered into a series of conversations with M. Maritain while he was lecturing at the University of Chicago in January. As anxious as I to clarify matters which had become somewhat muddled by recent discussion, M. Maritain made two points: first, that he thought both theories must concur in affirming a common generic nature (in ontology) as well as a common genus (in logic); second, that he thought the second theory had to agree with the first theory's view of a perfect hierarchy of specific natures, in which each member is, in essential grade of being, higher or lower than a proximate inferior or superior, and in which no two specific natures are of coordinate grade in any respect except that in which all corporeal substances are of the same grade, namely, as corporeal

(i. e., as falling within the same *natural genus,* signified by the presence of prime matter in their substantial composition). At once I found it difficult to see how the notion of a common generic nature could be compatible with a strict view of the hierarchical order of specific natures. This difficulty was removed when M. Maritain and I were able to formulate a conception of the genus as being *doubly* determinable even though the two species, resulting from the two determinations to which the genus was susceptible, had only *one positive difference* between them. This conception of the genus departs from the usual view which makes it determinable by *two or more positive differences,* such that each of the species within the same genus is constituted by the possession of a perfection diverse from the perfections possessed by the other species. In this new conception of the genus, there can be only two species dividing it, and they divide it according as one possesses a perfection which the other rejects; the genus is indeterminate with respect to this one perfection, but in two ways—both as to its possession and as to its rejection, and hence it can be common to the two species, even though they differ, *inter se,* with respect to only one perfection.[11]

These two points which M. Maritain made had for me more drastic consequences than he himself, perhaps, envisaged.[12] The source of all these consequences was the insights which occurred as soon as we had succeeded in conceiving the genus in a way that was completely compatible with the principle of a perfect hierarchy. I realized then, first, that if the second theory had to agree to the first theory's principle of hierarchy, it could no longer hold on to the usual notion of common genus which was incompatible with strict

[11] This brief indication of the new point, by which the error in the first theory was corrected, must suffice here. An adequate analysis of the point will be given later. Vd. Part III *infra.* It will be noted, furthermore, that although the point is here stated in logical terms, it holds as well for the ontological account of generic and specific natures, since once the error in the first theory is corrected there is no longer any discrepancy between the logical ordering of concepts (as *genus, species,* etc.) and the ontological order of natures (as *generic, specific*).

[12] At the time he proposed them, M. Maritain suggested that, in the light of these points, each of the two opposing theories might be regarded as *possible*; for if it admitted a common genus, the first theory was no longer intrinsically impossible on Thomistic grounds; and even if it admitted the first theory's view of hierarchy, the second theory might still disagree with the first about the actual number of specific natures in the corporeal world. Hence, in M. Maritain's view, the issue between the two theories now largely turned on the question of the number of species—an issue which might be resolved some day by empirical evidences, or might never be resolved because of intrinsic limitations in human knowledge. In the latter case, the two *possible* theories would remain perennially in opposition in the philosophy of nature.

hierarchy; hence, that if the second theory could not differ from the first with respect to the order of specific natures, it could not differ with respect to their number; in short, that once the two theories concurred in the principle of hierarchy, the second could not differ from the first on any essential point, without being intrinsically and incurably false. And, in the second place, I saw that as soon as the first theory's denial of a common genus had been corrected by conceiving a common genus in every way compatible with perfect hierarchy, then the first theory became completely devoid of difficulties: not only were the difficulties which my critics had raised no longer present in any way; [13] but, what was even more impressive, the objections which I myself had raised to the first theory (especially objection seven [14]) could now be completely answered, whereas before they seemed completely unanswerable. By my own criterion of judgment, I was compelled, therefore, to conclude that the problem of species could be resolved; that the second theory, in so far as it continued to differ from the first, involved incurable errors which made it untenable on Thomistic grounds; that the first theory, rectified of an accidental error and, in consequence, free of all difficulties, was true.[15]

5. I shall proceed in the following order. It is necessary to begin with some clarifications, both of the language we must use and of tangential matters. This must be done in order to prevent certain superficial misunderstandings which tend to obscure the whole problem. Then, I shall undertake an analysis of the notion of genus, showing, first, what conception of genus must be employed in the context of a strict hierarchical ordering of species; second,

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[13] That is, there is no longer any difficulty about predicating *animal* of *brute* and *man*, or of *cow* and *man*, within the framework of the first theory; nor is there any longer a lack of "parallelism" between logic and ontology, for there is no discrepancy whatsoever between a logical hierarchy of concepts, ordered as genus and species, and an ontological hierarchy of natures, ordered as generic and specific. Vd. fn. 11 *supra*. Hence, the objections raised by Prof. Pegis and Father Smith are fully answered: the rectified first theory does not violate the basic truth that modes of predication follow modes of being.

[14] Vd. *op. cit.*, Ch. VIII: pp. 204-206; The Thomist, II, 145-147.

[15] The reader may wonder whether M. Maritain agreed to the drastic consequences which I thought followed from his own premises, and from the rectification of the first theory accordingly. I cannot answer that question definitely here; but later I shall report M. Maritain's reactions to the demonstrative resolution of the problem, which I presented to him at the end of our conversations. Vd. fn. 80 *infra*. Beyond that, it is for M. Maritain to speak for himself on these matters; it is my hope that he will soon write an article which will carry the whole discussion further—to what ultimate point I do not know, but I hope at least to the point of agreement about the truth of the first theory.

that there is another conception of genus which cannot be so employed; and, third, in terms of these two conceptions of genus I shall be able to state the opposition between the first theory as rectified and the second theory as still persisting in disagreement with the first. The true issue being clear, it can then be resolved: by showing why the second theory is untenable, and how the first theory is free from difficulties. The most important part of this demonstration will be to show that the very reasons by which the second theory is disproved are the reasons for the truth of the first theory. After the demonstration, I shall briefly discuss some of the consequences of the resolution, especially concerning the relation of logic to the philosophy of nature, for we shall find that there are two quite different logical orderings of concepts as species and genera, according as the principle of differentation is essential or accidental, and when these two sorts of logical hierarchy are properly distinguished we shall find that they image two sorts of ontological hierarchy—the order of real essences, or specific natures, and the order of accidental concretions, or racial natures. In a concluding section, I shall try to suggest a solution of the historical problem (the problem of the origin and persistence of a false theory) by indicating how the two different sorts of hierarchy became confused, first in logical analysis, and then in the philosophy of nature.

II. PRELIMINARY CLARIFICATIONS

6. Like every other word in popular or technical usage, the word "species" is ambiguous in many ways. Like every other concept, truly possessed by the mind, the concept *species* is a single meaning, a single intention. Because social words are instrumental signs which signify through the passions of the soul, (primarily through mental words or concepts), they *have* meaning; the same word can have a variety of meanings according as it is imposed as a name upon different things, each, of course, *as understood*. Because mental words or concepts are formal signs, they do not *have* meanings; they *are* meanings or intentions; it is their very nature to signify their object; hence the mental word is never a name, for it does not need to be *imposed* in order to signify; and the concept cannot be ambiguous, for it cannot be any meaning or intention other than the one it is.

Now if the word "species" were unambiguously used, if the word "species" were always used, even by philosophers, to signify what is intended by the concept *species*, the discussion of certain philosophical problems would be much simpler. But we know that that is not the case, and, furthermore, that we can never expect it to be.

That being so, we must make strenuous efforts to save discourse from the failures of communication which always threaten us because of the difficulties intrinsic to the use of language. And these difficulties are peculiarly acute in the case of such words as " species," " genus," " difference," etc., because of the peculiar character of the concepts through which these words *sometimes* signify, in one of their many usages. Let me explain.

Concepts can be divided into two sorts: they either terminate the direct act by which the intellect understands *real* beings, or they terminate the reflexive act by which the intellect understands its own acts and the concepts, or so-called *logical* beings, which are involved in the intellect's direct acts of understanding. This is the basic distinction between the first and second intentions of the mind. Now, whereas it is true that certain concepts are purely and exclusively second intentions, it is not true that every concept, other than these, is purely and exclusively a first intention. The reason for this is simply that every concept, *other than those which are purely second intentions,* can function both in the mind's direct acts of understanding and in its reflexive acts. To make this plain, let us consider two judgments: (1) a judgment expressing an act of direct knowledge, such as " John is a man "; (2) a judgment expressing an act of reflexive knowledge, such as " man is a species (or a concept, a universal, a predicate, etc.)." In the first type of judgment, the concept *man* functions as a first intention, for it is that whereby we understand the real nature of this singular substance. In the second type of judgment, the same concept *man* functions, in a special way, as a second intention, for it is itself now the object being understood. I refer to the way in which the concept *man* functions as a second intention as " special " because it is not the same as the way in which the concept *species* functions as a second intention in the same judgment. The latter concept is a second intention in the primary sense of being that whereby we understand the ideal nature of this particular concept, the concept *man.* In short, just as judgments which express acts of direct knowledge are constituted by subjects and predicates, so also are judgments which express acts of reflexive knowledge; and just as both subject and predicate in the direct judgment must be first intentions, so the concepts, which are subject and predicate in the reflexive judgment, must both be second intentions. But only certain concepts can function as predicates in reflexive judgments. (These are such concepts as *concept* itself, *predicate*, *universal*, and, of course, the concepts traditionally known as the five predicables or the five universals, *genus*, *difference*, *species*, *property*, *accident*.)

All concepts other than these can function as subjects in reflexive judgments, but they can also function as either subjects or predicates in direct judgments. Furthermore, the concept which can function as either subject or predicate in a direct judgment, as well as the subject in a reflexive judgment, can never function as the predicate in a reflexive judgment; whereas, in sharp contrast, the concept which can function as the predicate in a reflexive judgment may also be able to function as the subject in such a judgment (as when we say "species is a universal") but it can never function either as subject or as predicate in a direct judgment.

This distinction between two sorts of concepts can be summarized as follows. Let us use the phrase "logical concept" to name those few concepts which are primarily and exclusively second intentions. And let us refer to all other concepts, which are primarily first intentions though they may also be the subjects of second intentional judgments, by using the word "concept" without qualification. It will be seen at once that whereas all concepts are *logical beings*, beings of the mind, *entia rationis* as divided against *entia naturae*, only some concepts, in fact a very small number, are *logical concepts*.[16] Furthermore, let us dis-

[16] An interesting ambiguity in the word "logical" is discovered by comparing its two uses in this sentence. In its first use, the word "logical" signifies one of the divisions of being, and has a connotation closely related to that of the words "ideal" and "mental" as opposed to the signification of such words as "real" and "physical." In its second use, the word "logical" signifies that the concepts so described belong peculiarly to the science of logic. Logical concepts are the fundamental categories in terms of which the logician analyzes all concepts. The science of logic has its own proper categories of analysis, just as the science of metaphysics has its own fundamental terms, the transcendentals, which can be called "metaphysical concepts"; or just as the science of grammar has its own basic categories, i. e., the parts of speech, which can be called "grammatical concepts."

There are, unfortunately, several meanings of the phrase "*ens rationis*." I am using it here to make the division between two modes of existence which any essence or *res* can exercise: real, or physical, and intentional, or mental. In this way *ens rationis* is divided against *ens naturae* according to the distinction between what exists in the mind (*but can also exist apart from it*) and that same thing (*res*) as it exists apart from the mind in the real order. But *ens rationis* is also distinguished from *ens reale* according to a different principle: that is said to be an *ens rationis* which can exist only in the mind and cannot exercise any real existence. John of St. Thomas divides *entia rationis* of this sort into two kinds: negations, privations, fictions, on the one hand, and relations of reason, or pure second intentions, on the other. (Vd. *Cursus Philosophicus, Logica*, Pt. II, Q. 2, A. 1.) As I shall use the phrase "*ens rationis*" I shall mean only those concepts which have a *fundamentum in re*, and never those which have no *fundamentum in re*; concepts which have a *fundamentum in re* can be either first intentions or second intentions; and this is to say that I shall be considering only real things in so far as they exercise intentional existence under a primary or secondary mode of

tinguish two modes of the second intention. According as a concept functions as the subject of a judgment in the second intention, it signifies itself as the object of thought. Let us speak of it as a second intention *reflexively*. According as a logical concept functions as the predicate of a judgment in the second intention, it signifies some aspect of the nature of the subject-concept which is the object of thought in this case. Let us speak of it as a second intention *predicatively*. (There is, of course, no need for a similar distinction between the subject-concept and predicate-concept of a judgment in the first intention; for in so far as both concepts are universals, both are first intentions predicatively, even though one may function as the subject of the judgment.[17]) Hence we can say that only logical concepts can function as second intentions predicatively (though they may also function as second intentions reflexively); whereas ordinary concepts (non-logical concepts in the precise sense already indicated) can never function as second intentions predicatively, but either as first intentions or as second intentions, *but then only reflexively*.[18]

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intellectual consideration. It is only in the first mode of distinction between *ens naturae* and *ens rationis* that *ens* is said analogically of the same *res* exercising a different *esse* (real or intentional). In the second mode of distinction, *ens* is said equivocally, as John of St. Thomas points out; but I would exclude relations of reason (pure second intentions) from this equivocation, for they are real things under a secondary mode of intellectual consideration, and therefore must be distinguished from negations, privations and chimerae. (Cf. St. Thomas, *Summa Theologica*, I, 16, 3 ad 2.) It is interesting, further, to observe that the division of the real into the actual and the possible is paralleled by a similar division of the rational into the possible and impossible (i. e., respectively capable and incapable of having a *fundamentum in re*); and that which is *rationally* possible, in this sense, i. e., capable of *realization*, may be either *really* actual or *really* possible, whereas that which is purely ideal in the order of reason can never be really actual.

[17] All predications in the first intention are ultimately of first substances. The primary distinction, therefore, in the case of all judgments in the first intention is that between the singular and the universal judgment, according as the subject of the judgment is a singular or a universal term. The subject of a universal judgment is always a first universal intention predicatively, in the sense that that same concept can always be a predicate in a singular judgment, in which the subject-term is a singular, and not a universal, intention. That the judgment "man is an animal" is in the first intention can be seen in two ways: (1) Both subject and predicate are predicable of a singular term, such as "John." (2) It is indifferent whether the grammatical form of the judgment be "man is an animal" or "men are animals." *By the same criteria*, "man is a species" is seen to be in the second intention because (1) the predicate is not predicable of any singular term, and (2) "men are species" is nonsense.

[18] To be sure that these distinctions are plain, let me give a parallel analysis in the field of words, with respect to the impositions. The first imposition of a word is as a name imposed upon that which is not a word, but a thing to be signified.

There is one further point which complicates the analysis of intentions. Just as it is true that the agent intellect is never not active, just as it is true that there is never an act of intellect unaccompanied by an act of imagination, or conversely, so also is it true that the human mind is always reflexive, by which I mean that there is never a purely direct or a purely reflexive act of the intellect. Whenever we understand anything, we also understand our act of understanding; and we can never understand our act of understanding unless our intellect is in act understanding something.[18a] Of course, the fact that there is never a temporal separation of direct and reflexive intellectual acts does not mean that we cannot discriminate between these two modes of intellectual activity; and this distinction is not purely analytical for it is a real distinction on the part of intellectual activity itself. Were this not so, we could never have discovered the distinction between the first and the second intentions of the mind. Thus, we are led to see that no concept is ever *purely* a first intention.[19] In every ordinary concept

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The second imposition of a word is upon another word, and not upon a thing; it is an imposition made for the sake of naming the class of words to which a given word can belong. Thus, in the sentence, "John is a man," both the word "John" and the word "man" are first impositions; but in the sentence "man is a noun," the word "noun" is clearly a second imposition. Now, in the latter sentence, the subject-word "man" is used to refer to itself as to that which is being talked about. As thus used, it is not a first imposition nor is it a second imposition in the same way that the word "noun" is. Therefore, we must distinguish two kinds of second imposition: a reflexive second imposition (i. e., the use of a word to refer to itself) a predicative second imposition (i. e., the use of a word to talk about another word). Now, the words which signify the concepts of grammatical analysis are the only words which are purely second impositions, i. e., capable of being used in the second imposition predicatively. (Cf. fn. 16 *supra*.) In contrast, all other words are primarily first impositions, although they can be used in the second imposition reflexively, when we try to talk about them as words, rather than use them to talk about things which are not words. The parallelism of these grammatical distinctions with the logical distinctions already made should be clear. In the judgment, "John is a man," the concept *man* is a first intention. In the judgment, "man is a species," the concept *species* is a second intention predicatively, whereas the concept *man* is a second intention reflexively.

[18a] What is here said is equally true of first and second intellectual acts—of conception as well as of judgment, or judgment as well as of conception.

[19] I am here treating only of the *formal* concept, the medium *quo* of understanding. The objective *concept*, which is at once the medium *quod* and the *quid* of understanding, must be analyzed differently. Considering the objective concept as the objectification of the thing whereby it becomes an object of understanding, we see that it is not susceptible to the same distinction between first and second intentions. If we restrict the word "intention" to name only that which functions as a formal sign, then only formal concepts are intentions; though, of course, in another sense of the word, we must speak of objective

there is a second intentional note in addition to its first intentional note which is its signification of the thing-as-intended. In other words, no concept functions as a first intention, in the direct act whereby we understand a thing, *without its being understood as a universal,* as a result of the reflexive act whereby we understand the concept itself. The intention of universality (which is a second intention) must be present in the concept *man* when we use that concept, either as predicable of many or as a universal subject of predication.[20] And when a concept, such as *man,* is used as a predicate in a direct judgment, it contains a further second intentional note, such as the intention of *species.* Although no fully developed concept is ever purely a first intention (devoid of all second intentional notes), there are some concepts, the few we have called "logical," which are purely second intentions. Yet even these contain implicitly the first intentions from which they are derived. Just as the concept *man* contains implicitly the notion of particular men, so the concept *species* contains implicitly the notion of *man* or *cow* or whatever can properly be regarded as *a species.* Thus, the omnipresence of reflexivity in all intellectual acts is not violated by concepts which are primarily first intentions, and the omnipresence of direct understanding is not violated by those logical concepts which are primarily second intentions; though it should be noted, of course, that the way in which second intentional notes are present in ordinary concepts is not the same as the way in which first intentions are implicit in logical concepts.[21]

The foregoing exposition is for the sake of clarifying the use of

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concepts as intentional, rather than as real, beings. In fact, when a formal concept which is primarily a first intention, functions as a second intention *reflexively,* and thus becomes an object of thought, it also becomes the objective concept of the nature: it is that nature-as-understood, now under a secondary mode of consideration.

[20] It is true to say, therefore, that second intentions are drawn from first intentions, because every concept which is a first intention, implicitly contains second intentional notes. Vd. John of St. Thomas, *Cursus Philosophicus, Logica,* Pt. II, Q. 2, A. 2.

[21] In the ordinary concept, the second intentional note must be explicitly present in order for the concept to function perfectly as a subject or predicate in a *universal* judgment; but in the logical concept the first intentional note is present only implicitly, and that is why the logical concept can be said to be not only primarily but purely a second intention. Just as singulars are implicitly present in every first intentional universal, so first intentional universals are implicitly present in every second intentional universal. The judgment "man is a species" is the analogue, in the second intention, of the singular judgment in the first intention, i. e., "John is a man"; for just as there are many singular instances of *man,* so there are many individual concepts which are instances of *species.* Cf. St. Thomas, *In Perihermenias,* Bk. I, 7, Lect, 10, # 9.

such *words* as "species" and "genus." Their ambiguity is more difficult to control than that of most words, because in one of their usages they signify either the logical concepts *species* or *genus,* or the second intentional note (the intention of *species* or *genus*) which is present in ordinary universals, such as *man* and *animal.* If this were their only usage, we should have few difficulties; but, unfortunately, these words are used in discourse about the nature of things, as well as in purely logical discourse about concepts. This is true of all the words which have been used to name the predicables. Thus, the words "property" and "accident" are certainly used in ontological discourse, as well as in the science of logic. And there can be no question about the word "species" being used both ways. The passages in which Aristotle and St. Thomas use the word "species" in a way that does not *directly* refer to either an ordinary or a logical concept are much too numerous to cite. I shall content myself with merely indicating some of the contexts in which such usage occurs: in Aristotelian works concerned with the classification of plants and animals; in Thomistic treatises on creation or the work of the six days, in which, for example, it is asked whether God created the species of corporeal substance in act or in their causes, or in which it is said that in things generable and corruptible the individual is for the sake of the species; in the treatise on angels, who are spoken of as species; in the Thomistic consideration of man, in which specific human nature is discussed in terms of its relation to all infra-human species; and in all modern scholastic discussions of biological science and the theory of evolution, in which an effort is made to distinguish between natural and systematic species. In all these contexts, what is being talked about when the word "species" is used is certainly not, *in the first instance,* an idea, neither an ordinary concept nor the logical concept which is one of the five predicables.[22]

But the question may be raised at once whether the purely second intentional concept *species* is not always being somehow referred to whenever the word "species" is used in any way, even though perhaps it is not being referred to *directly* or *in the first instance.* I think the answer is, with unimportant exceptions, definitely affirmative. A full understanding of this affirmation is necessary for the clarification in which we are now engaged; and in order to achieve this understanding it is necessary to consider further the various dimensions of verbal ambiguity.

[22] It is unnecessary to go through the same enumeration for the word "genus." Its range of ambiguity in a variety of contexts is approximately the same as that of the word "species," though as we shall see later the word "genus" raises some problems of usage peculiar to itself.

The first and simplest way in which most words are used ambiguously is their being used to signify quite different things, when the medium of their signification consists of different concepts. Thus, the word " species " can be used to signify gold or silver coin; and this usage of the word in monetary theory appears to be equivocal when contrasted with the usage of the same word in logical theory. Let us call this type of ambiguity " notional." [23] Another, more subtle, and less often recognized, type of ambiguity is that which attaches to words because they can be used in the first or the second intention. Let us call this type of ambiguity " intentional " and proceed with its analysis.

Mental words (concepts; formal signs) *are* intentions. Social words (physical notations; instrumental signs) *have* intentions: whatever intentions or significations they *have* accrue to them from the concepts through which they signify when they are imposed as names. As notionally ambiguous, a word in two usages signifies differently because in the two cases it signifies through distinct concepts (e. g., the notional ambiguity of the word " species "). But as intentionally ambiguous, a word has a single mode of signification notionally (i. e., it signifies through a single concept), but in that single mode of signification there is a duplicity of intentional notes. The only words which can be used without intentional ambiguity are those which are used as *purely* proper names. All other words, all strictly communicable names, since their mode of signification is through concepts or universals, have intentional ambiguity in usage precisely because of the point already made, namely,that no ordinary idea is ever purely a first intention.

The easiest way to detect the intentional ambiguity latent in all common names is by examining these formally invalid syllogisms: " John is a man, man is a species, John is a species "; " man is an animal, animal is a genus, man is a genus." These syllogisms are formally invalid because they commit the fallacy of four terms. But the duplicity of the " middle term " is not due to notional, but to intentional, ambiguity. In each case, the word expressing

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[23] It is unimportant for our discussion that this use of " species " is now obsolete, the word " specie " now being used for coin of the realm. I had in mind this equivocal use of the word " species " to signify coin, when I said there were some unimportant exceptions to my affirmative answer to the question raised in the preceding paragraph. Other interesting examples of notional ambiguity in familiar philosophical words are: the use of the word " essence " in metaphysics and chemistry; the use of the word " substantive " in law, in grammar, and in metaphysics. I am not here concerned with whether these ambiguous usages are always equivocal, or whether they are sometimes analogical in the metaphorical or attributive mode. Vd. the 9 meanings of " species " listed in the large Webster.

the middle term in the minor premise signifies through a concept as a first intention, whereas the *same word* expressing the middle term in the major premise signifies through the same concept as a second intention.[24] One of the formal rules of valid syllogizing should therefore be that the three terms must be concepts uniformly in the first or the second intention. From a direct judgment as one premise and a reflexive judgment as the other, it would appear that no conclusion can be validly drawn, because the premises violate the rule of uniformity of intention.[25] I say "appear" because there is one way of drawing a conclusion from premises which are heterogeneous as to intention. Thus, from "John *is* a man," and "man *is* a species," we can conclude that "John *has* a species," or to speak more precisely, "John *has* a specific nature." Similarly, from "man *is* an animal" and "animal *is* a genus," we can conclude that "man *has* a generic nature." This way of drawing a conclusion, in spite of the intentional ambiguity of the word expressing the middle term, shows us a good rule for solving the intentional ambiguity of communicable names in general, and of such words as "species" and "genus" in particular.

Whenever the word "species" or the word "genus" is used in the first intention, as is the case in ontological discourse, it must always be used as signifying a *specific nature* or a *generic nature;* and it can signify in this way only if the medium of its signification is a *specific concept* or a *generic concept.* But a specific concept such as *man,* is not the concept *species;* nor is the generic concept *animal* the concept *genus.* And a particular concept, such as *man,* can not be reflexively understood as *specific* unless it is

[24] It may be thought that the fallacy of four terms is grammatically indicated by the fact that the grammatical predicate of the sentence expressing the minor is "a man" whereas the grammatical subject of the sentence expressing the major is "man." This, however, is an accident of English usage; it does not occur, for example, in Latin: "*Petrus est homo, homo est species, Petrus est species.*"

[25] This rule can be stated in other ways: *grammatically,* the word expressing the middle term must be intentionally, as well, as notionally unambiguous; *logically,* the concept which is the middle term must function either as a first intention or as second intention in both judgments. (If it could not function in both ways, we would not have this problem of restricting the concept to its first or its second intentional notes.) The rule has further implications. The logical canon that all predication is of first substances is true only of predication in the first intention. Predication in the second intention is always of second substances as the ultimate subject. That is why when the major predicate is a second intention, it cannot be predicated through the middle term, if that middle term as a predicate is first intention. Duplicity of intention in the "middle term" violates the rule that whatever is predicated of a predicate can be predicated in turn of its subject.

understood as *a species,* i. e., as subject to the reflexive judgment in which the logical concept *species* is predicated of this ordinary concept *man;* furthermore, it should be said that this reflexive judgment merely explicates the second intentional note, *species,* already present in the concept *man,* which is primarily a first intention.[25a] We have here, then, a series of related significations of the word " species." And it is obvious at once that the primary signification must be the logical concept *species,* for, in the first place, it is only through this concept that the word " species " can be used derivatively when it signifies a given concept, such as *man,* as *a species* or as *specific;* and, in the second place, it is only through a concept, such as *man,* explicitly understood as specific, that the word " species " can be further used derivatively when it signifies a given nature, e. g., human nature, as *specific.* This shows that the intentional ambiguity of the word " species "—when used in these three senses—is not sheer equivocation; on the contrary, the three significations are related here as the significations of a word used analogically in the attributive mode.[26] Our understanding of what it is for any concept to be a species depends upon our possessing the concept *species* itself; thus, our concept *species* is the cause of our understanding the concept *man* as specific; and, furthermore, our understanding of the concept *man* as specific is the cause of our understanding John as having a specific nature. Hence any use of the word " species " other than in the second intention to signify the concept *species* itself is a derivative usage dependent upon that primary usage. Even when the word is used in the second intention to signify the concept *man* as specific, the usage is derivative; and it is certainly derivative when we use the word in the first intention to signify a nature as *specific,* a nature we have come to understand by means of a specific concept.

To summarize the discussion thus far: (1) The concept *species* is always a logical concept (a second intention); it is never an

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[25a] It is worth observing, in terms of the Kantian distinction between explicative (analytic) and ampliative (synthetic) judgments, that *all* judgments in the second intention are explicative.

[26] It is not important to raise the question here whether the use of the word " specific " of both concept and nature is a case of the analogy of proper proportionality, rather than of attribution. Viewing the specific nature and the specific concept as the same *res* exercising two analogical modes of existence, *real* and *mental,* we may have ground for thinking that the analogical use of the word " specific " in the two cases is proportional rather than attributive. But even if it is proportional, viewed in one way, it can also be attributive, as viewed in the causal order of knowing and naming. Certainly, the use of the word " species " to name the concept *species,* and the use of the word " specific " to signify a logical property of an ordinary concept, is a case of derivative naming by attribution.

ontological concept (a first intention). (2) An ordinary concept, such as *man,* is never a logical concept; but although it is primarily an ontological concept (a first intention), it always includes second intentional notes, such as the intention of specificity. (3) The word " species " is not only notionally but intentionally ambiguous; as intentionally ambiguous, it can be used either in the first intention or in the second; as used in ontological discourse (in the first intention) it is used to signify natures *as specific;* as used in logical discourse (in the second intention) it is used to signify either (a) ordinary concepts, such as *man,* as specific, or (b) the concept *species* itself. Of these three related usages of the word " species," only the last is primary; the other two are derivative, and the first more so than the second. (4) The word " man " is also intentionally ambiguous, as indicated by the invalid syllogisms which we examined: it can either (a) signify through the medium of the concept *man* functioning as a first intention in ontological discourse, or (b) signify the concept *man* itself, functioning in logical discourse as a second intention reflexively.[26a]

I think I have now clarified a point which seems to have caused much trouble to some readers of *The Problem of Species.*[27] When I spoke of "ontological species " and " logical species," I did not mean that there were two kinds of *species.* I certainly did not mean that *actual* universals existed outside of the mind and apart from knowledge.[28] Regardless of the purity of my intentions, my manner of speaking seems to have had unfortunate consequences, from the

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[26a] Cf. St. Thomas, *In Perihermenias,* Bk. I, 7, Lect. 10, # 9, wherein he enumerates four modes in which a universal concept can be employed.

[27] Vd. *op. cit.,* Preface, in which M. Maritain writes: " The notion of species is *in itself* a logical notion. . . . This notion, logical in itself, can be employed either from the logical or the ontological point of view. There is no reason, therefore, to distinguish two sorts of species, logical and ontological species. It is the same *species* or the same *genus,* which can be employed in either a logical or an ontological sense; that is, either to designate a universal as it exists in the mind, or to designate the fundament which the universal has in things " (pp. ix-x). I take it that Mr. Maritain is here saying that the notion of species is strictly a logical concept; and that any use of the word " species " to signify anything other than the concept *species* itself, is a derivative mode of signification. Strictly speaking, the concept *species* is never used ontologically; the word " species " can be used ontologically, and so can ordinary concepts, such as *man,* which may include the intention of *species* among their notes. That M. Maritain's and my understanding of these matters converge can be seen from what he later wrote, in reply to misapprehensions of my language: vd. " Concerning 'A Critical Review,' " *loc. cit.,* pp. 46-47.

[28] Vd. *op. cit.,* pp. 12 ff.; The Thomist, I, 90 ff.: " When I speak of ontological species, I am using the word ' species ' in the first intention to refer to the specific nature of an existing composite substance."

point of view of communication. In order to prevent any further misunderstandings, I shall adopt the following rules of usage. I shall henceforth *never* use the word "species" (or similar words, such as "genus" and "difference," in the first intention. Whenever, in the context of ontological discourse, I am treating of natures I shall use such words as "specific" or "generic" to convey the distinctions (derived from the concepts *species* and *genus*) which are applicable to such natures.[29] I shall restrict my use of the word "species" (and "genus" and "difference") to the context of logical discourse, in which, using them in the second intention, I shall be referring either to the logical concepts of *species, genus,* and *difference* themselves, or to ordinary concepts considered as *a species,* or *a genus,* or *a difference.* Finally, whenever I use a word like "man" or "animal" I shall try to indicate whether I am using it in the first intention, as a term in ontological discourse, to name the specific or generic nature of an existing substance; or in the second intention, as a term in logical discourse, to name the specific or generic concept through which that nature is understood.[30]

To complete the verbal clarification, some comment on the words "ontological" and "logical" is needed. Here we are concerned with notional, not intentional, ambiguity. We have already seen two related meanings of the word "logical": (1) as qualifying the word "being" and (2) as qualifying the word "concept." In the first usage, the word "logical" is used to signify a distinction within the analogy of being, i. e., between two modes of being,

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[29] The most difficult word is "difference." I shall try to refrain from using this word in the first intention, for otherwise I would have to speak of the differential nature, just as I speak of the generic nature—the two together being the copenetrating principles of the specific nature.

[30] I hope the reader will realize that it was not out of sheer perversity or negligence that I adopted a looser vocabulary in *The Problem of Species.* I could not have quoted and commented on countless passages in the writings of Aristotle, St. Thomas and contemporary scholastics, without using the *words* "species" and "genera" as they are generally used—very loosely, i. e., both in the first and in the second intention, both in ontological and in logical discourse. In order to prevent confusion, I tried to use the words "ontological" and "logical" as qualifiers so as to indicate in what universe of discourse the words "species" and "genus" were being used at every point, in the passages quoted or in my own writing. But the use of the qualifiers seems not to have worked; in fact, they caused worse confusions than they were aimed to cure. I must now ask the reader to abide by the strict canons of usage I have set up for myself. I shall leave to him the task of interpreting the many passages in traditional texts which use words much more loosely. May I add one thing more: if I had adopted the strict usage I shall now employ, I would have had to entitle my book "The Problem of Specific Natures" for, as a work in the philosophy of nature, that was its primary concern, not *species.*

real and mental, according to which a *res* exercises physical or intentional existence. In the second usage, the word "logical" is used to signify a distinction within the order of mental being itself, as between all ordinary concepts (which are primarily first intentions and are primarily used in ontological discourse) and a special set of categories (which are exclusively second intentions and are exclusively used in the science of logic). Thus, all judgments are logical in the first sense, but only those judgments which a man makes in his technical role as a logician are logical in the second sense.

The word "ontological" has three related meanings, through all of which runs a note of contrast to the meaning of "logical," in both its senses. The primary use of "ontological" is as a qualifier of the word "knowledge." Just as being is divided into real and mental (or logical), so knowledge of being is divided into ontological (or knowledge of real being, direct knowledge, employing concepts as first intentions) and logical (or knowledge of mental being, reflexive knowledge, employing concepts as second intentions). But there are at least three grades of knowledge of the real: of *being* as such, of *mobile being,* of the *phenomenal manifestations* of mobile being. Hence, we can use the word "ontology" in the narrowest and strictest sense to designate metaphysics; or more broadly to designate all philosophical knowledge, including both metaphysics and the philosophy of nature; or most broadly, to designate all knowledge of the real, including the natural and even the social sciences as well as philosophy. Since the problem of the order and number of specific natures requires us to consider the findings of the natural sciences as well as the principles of the philosophy of nature, I used the word "ontological" in the broadest sense to name all knowledge of the real, in contrast to "logical" as naming the science of logic. Hence, in one pair of their opposed meanings, I used "ontological" and "logical" to refer to distinct universes of discourse, radically different types of knowledge. But just as the word "logical" can be used (unfortunately so, I think) as a synonym for mental, qualifying the word "being," so can the word "ontological" be used as a synonym for real, also qualifying the word "being."[31] Hence, when I spoke of an ontological as opposed to a logical hierarchy, I meant, in the first instance, a

[31] This usage of "ontological" seems to me to be no more regrettable than the similar usage of "logical." The primary usage of both words is to name spheres of knowledge; the derivative use of a name for a kind of knowledge to name the kind of being thus known has always seemed to me the sort of appellation most likely to result in a variety of confusions.

hierarchy of natures, in the order of real being; in the second instance, a hierarchy of concepts, in the order of mental being. Of course, it follows that our exposition and explanation of an ontological hierarchy is the work of ontological knowledge, just as the setting fort of a logical hierarchy is the work of logical science.

In the light of the foregoing I shall continue to use the words "ontological" and "logical" as a pair of opposites in the two related senses just indicated.[32] This verbal clarification also enables me to make two other preliminary points.

(1) For the purposes of our present discussion, we need not consider the problem of the ontological *vs.* the logical, as that occurs in metaphysics. I am here referring to the metaphysical account of the analogy of being as including these two fundamental modes of existence: real, or physical, and intentional, or mental. We need only to proceed in the light of that analysis, in terms of such truths as *verum sequitur esse rerum,* and the axiom that modes of predication follow modes of being.[33] No solution of the problem of species and specific natures can be sound if it violates any of the metaphysical truths about the analogy of being, and particularly about the correlation of real and intentional existence: i. e., the sameness of the nature or *res,* which is able to remain the same while exercising these two modes of existence.[34]

But we are concerned with the problem of the ontological *vs.* the logical, as that occurs in epistemology. I am here thinking of the problem of how these two spheres of knowledge are ordered to one another. The oft-cited fact that the science of logic considers, *in its own way,* everything which falls within the scope of all other bodies of knowledge (i. e., all knowledge of the real),[35] does not solve

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[32] If these usages had been understood, it would have been understood that when I said "species ontologically considered," I meant the *object* which is being considered when a philosopher of nature or a natural scientist uses the word "species" as a technical term in his universe of discourse—namely, a specific nature.

[33] Vd. Yves Simon, *L'ontologie du connaître,* Paris, 1934; Fr. G. B. Phelan, "Verum Sequitur Esse Rerum," in *Mediaeval Studies,* Vol. I (New York, 1939): pp. 11-22; and J. Maritain, *The Degrees of Knowledge,* New York, 1938; and *A Preface to Metaphysics,* New York, 1939.

[34] This, as I have already pointed out, was one of the main contentions in Father Smith's review (vd. fn. 9 *supra*), and it was warranted by the accidental error in my formulation of the first position—an error which caused the first theory to violate the correlation between real and logical being.

[35] Vd. Aristotle, *Metaphysics,* IV, 2, 1004^b 17-26; and St. Thomas's commentary on this passage, *In Meta.,* IV, lect. 4, 574: "Now, the beings of reason are comparable with the beings of nature, because all the beings of nature fall under the consideration of reason, and thus the subject of logic extends to everything about

this problem. Although the spheres of logic and of ontology (in the broadest sense) are co-extensive, the two kinds of science are not simultaneous: each in its own way has a certain priority over the other. Thus, in the order of analysis, the logician has priority with regard to the notion of *species,* for *species* is exclusively a second intention; and when the philosopher of nature or the natural scientist uses this notion, he borrows it from the logician. This is seen in the fact that any employment of the word "species" or the word "specific" in the first intention is a derivative usage.[36] But, in the order of learning and discovery, first intentions are prior to second intentions, and here the student of nature, philosopher or scientist, takes priority. Nature itself is prior to knowledge of nature, and knowledge of nature, in turn, is prior to knowledge of knowledge. If there were not *in fact* substances differing specifically (i. e., diverse in specific nature), we could not *in truth* form concepts of these natures, which contained the intention of specificity, and hence we could never have derived the concept *species* itself. This fact about priority is extremely important to the philosophy of nature. Although he must listen to the logician with regard to *species* and *genus,* the philosopher of nature speaks first when it comes to saying how many specific natures there are, how they share generic natures, how they are ordered, etc. There need be no conflict between logic and ontology in the consideration of these problems, in which they both have an interest; but there will be conflict, with consequent confusions and errors, unless the two spheres of knowledge are well-ordered to one another. Thus, it is not for the logician alone to say whether the concept *man* is truly a specific concept; he can say what the formal properties of any concept must be in order for it to be *a species* or *a genus;* but the interpretation of the facts of nature in the light of strictly ontological principles is indispensable for the final determination whether this or that concept is *a species* or *a genus.*[37] Logicians, or readers

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which the being of nature is predicated. Whence Aristotle concludes that the subject of logic is equated to the subject of philosophy, which is the being of nature."

[36] The concept *species* is a second intention even when it lends its significance to the word "species" as used in the first intention to designate a specific nature; and even when it enters, as a second intentional note, into the signification of a concept, such as *man,* which is primarily a first intention.

[37] This, I take it, is M. Maritain's point in saying: "It is true that for his own comfort and for the sake of exemplifications, the logician often uses practically as *species* many objects of thought (for instance, 'the dog,' *animal latrans,* 'the stone,' 'the lion') which are not necessarily true species in the ontological sense (nor, therefore, in the logical one). In this sense I would agree in distinguishing between 'ontological species' and '(improper) logical species'" (*Problems for*

of logic, who fail to realize this fall into grave error, the sort of error which can become an obstacle to truth in the philosophy of nature, in so far as the student of nature must employ the logical concepts of *species* and *genus*. But falsity in the philosophy of nature can also cause errors in logic, for if the logician is misled by the naturalist to make wrong discriminations among concepts (e. g., between those which are and those which are not properly specific), he may develop a false or confused analysis of *species* and *genus*. In fact, both of these mistakes have actually happened in the history of *philosophia perennis*: falsity in the philosophy of nature has caused errors in logic, and errors in logic have been an obstacle to reaching the truth about nature.[38]

7. There is one other matter which requires preliminary discussion. Unlike the previous points of verbal clarification, this concerns the problem of universals. In order to proceed with the discussion of species and specific natures, it is not necessary to give a complete account of this matter, but it is necessary to be sure that everything which is to be said will be understood in terms of the doctrine traditionally called "moderate realism."

There is no problem about the object of logical knowledge. Whether he is concerned with concepts, judgments, or syllogisms, the logician is always dealing with actual universals, for he is dealing with *entia rationis*. But there is a problem about the object of ontological knowledge, be it philosophy or science. The object of such knowledge is not the singular *as such;* but neither is it the universal *as such* (i. e., the actual universal as it exists in the mind). What does it mean, therefore, to say that the scientist and philosopher seek to know the *natures* of things? This question must be answered within the restriction imposed by two facts: (1) the nature of a thing does not *exist* as a universal in the order of the real;

Thomists, Preface, fn. 2, p. x). Cf. *op. cit.,* fn. 129a, p. 94; The Thomist, I, fn. 129a, p. 392. In short, the philosopher of nature must tell the logician which natures are truly specific, before the logician can discriminate among concepts as *proper* and *improper species.* I shall return later to an explanation of the true significance of those concepts which are here called "improper species." But henceforth I shall speak of *proper* species and genera whenever I wish to indicate that what is conceived by the concepts so named are *really* specific and generic natures.

[38] I will return to this whole matter in the concluding part of this article wherein I shall try to account, historically, for the origin and persistence of the false theory of species, i. e., the second theory. Here I have tried only to point out why the epistemological problem of the relation of logic and ontology is important to us: i. e., because of the way in which these disciplines can interfere with each other, and infect each other with errors.

(2) the nature of a thing is *known universally,* i. e., as a nature somehow common to a plurality of individual existents.

The question is answered by St. Thomas when in discussing cognition he contrasts two false extremes with each other, and with a moderate middle position.[39] On the one hand, there is the extreme of nominalism and materialism. This combines one truth and one error: the truth is that all existents are individual; the error is that all human cognition is sensitive, i. e., an apprehension of the singular as such; from which the false conclusion is drawn that all common or communicable names are "universal" only by arbitrary imposition upon many, and without the benefit of a truly universal mode of signification. On the other hand, there is the extreme of realism and idealism. This combines one truth and one error: the truth is that human cognition is by an intellectual as well as by a sensitive faculty, the distinct faculties having diverse formal objects, i. e., the singular and the universal; the error is that the intelligible object is like the sensible object, in being actual prior to being known, and in existing in the same manner as it is known; from which the false conclusion is drawn that actual universals exist apart from the knowing intellect. Between these wrong extremes lies moderate realism which combines the truth and excludes the errors which are found in the extreme positions. With one extreme, it affirms that only individuals exist in the order of the real; with the other extreme, it affirms that man knows intellectually as well as sensitively, and knows intellectually by means of universal concepts through which the thing (*res*) is objectified in a universal objective concept; from which it draws the true conclusion that the intelligible object does not really exist as it is known. In the order of real existence, the intelligible object is potential, i. e., a nature *understandable* universally; in the order of the understanding itself (the order of intentional existence), the same thing (*res*) is no longer *intelligible* (i. e., potential, *understandable*), for it is now *intellected* (i. e., actual, *understood*). As actually understood, it is an actual universal, where before, as potentially understandable, it was a potential universal.[40]

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[39] Vd. *Summa Theologica,* I, QQ. 84, 85; Vd. also Q. 79, A. 3.

[40] "The mode of the intellect in understanding is different from the mode of the thing in its essence" (*Summa Theologica,* I, 13, 12, ad 3); "In these words *the thing actually understood* there is a double implication—the things which is understood and the fact that it is understood. In like manner the words *abstract universal* imply two things, the nature of a thing and its abstraction or universality. Therefore the nature itself to which it occurs to be understood, abstracted or considered as universal, is only in individuals; but it is understood, abstracted or considered as universal, as it is in the intellect" (*ibid.,* 85, 2, ad 2).

The implications of this analysis for our present discussion are drawn by St. Thomas in his consideration of communicable names:

> A name is communicable in two ways, properly and by similitude. It is properly communicable in the sense that its whole signification can be given to many. . . . For instance, this name *lion* is properly communicated to all things of the same nature as *lion*. . . . To know, however, what names are properly communicable, we must consider that every form existing in the singular subject, in which it is individual, is common to many either in reality, or in idea; as human nature is common to many in reality, whereas the nature of the sun is not common to many in reality, but only in idea; for the nature of the sun can be understood as existing in many subjects; and the reason is because the mind understands the nature of every species by abstraction from the singular. Hence to be in one singular subject or in many is outside the nature of the species. So, given the idea of a species, it can be understood as existing in many.[41]

The words we shall use to name the specific and generic natures of existing individual substances are properly communicable; and the natures thus named *are common to many in reality*, and not merely in idea. The understanding of this point is sufficient for our purposes, even though the metaphysical problem of the one and many remains undiscussed. The profoundly difficult metaphysical task of explaining the *unity* of the *nature* which is *common* to *many* in *reality* need not be discharged as a condition precedent to the resolution of the problem of species (i. e., specific natures), as that occurs in the philosophy of nature. Suffice it if we realize that the unity of the nature in reality, as common to many individuals (and through this community being a single intelligible object) *is not the same as* the unity of the nature in idea, as actually understood, the idea itself being reflexively understood as a single abstract universal, capable in its singleness of functioning as the medium whereby we know one and the same nature existing in many individuals.[42]

Thus, critical realism, holding that things are not as we know them, avoids the error of naive realism, holding that things are exactly as we know them; but it also avoids the error of subjectivism (which says that we cannot know how things are in distinction from the way they appear to us as known), by showing how the mind transcends itself by understanding its own operations; through this reflexive understanding we are able to know the difference between the way things exist in themselves and the way they appear to us as known. The fact of reflexivity also makes the objective concept, itself an actual universal, not only something *understood*, but something *understandable*, for it is the intelligible object of second intentional knowledge.

[41] *Summa Theologica*, I, 13, 9.

[42] "The universal can be considered in two ways," St. Thomas tells us. "First, the universal may be considered together with the intention of universality. And

I need not go further into the analysis of a concept's relation to its object. These matters have been adequally treated in many good contemporary discussions.[43] My only purpose is raising these questions at all was to make four points explicit: (1) that the doctrine of moderate realism is indispensable as a framework in which to carry on the discussion of species and specific natures; (2) that some community of natures (specific or generic) must exist in the plurality of existing individuals for our concepts (specific or generic) to enter into true universal judgments about reality; (3) that this can be so in spite of the fact that the common nature as *really* existing is not actually universal, and in spite of the fact that the unity of what is common to many in reality is not the same as the unity of the idea whereby that common nature is known; (4) that these things must remain true for whatever metaphysical account is given of the unity of the nature that is common to many in reality.[44]

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since the intention of universality, viz., the relation of the one to the many, is due to the intellectual abstraction, the universal thus considered is a secondary consideration. . . . Secondly, the universal can be considered in the nature itself—for instance, animality or humanity as existing in the individual" (*Summa Theologica*, I, 85, 3, ad 1). The so-called logical universal is thus seen to be a second intention, whereas the so-called metaphysical universal is a first intention. It is through the concept functioning as a first intention, as a metaphysical universal, that we apprehend the same nature in many individuals having the same nature. By means of the concept, functioning as a second intention, as a logical universal, we apprehend the unity of the idea itself.

[43] Vd. *op. cit.*, in fn. 33 *supra*; vd. also Fr. Gerard Smith, "The Concept in St. Thomas" in *The New Scholasticism*, March, 1938: pp. 52-56.

[44] I would like, in addition, to suggest two things. *First*, that *many* individual things (the ultimate material objects, the absolute *id quod* of knowledge) become *one* object when, in the process of being known, they are known *through* one formal concept (the *id quo*) and known *as* one objective concept (the medium *quod* and the *quid* of knowledge). That *many things* in existence can become *objectified*, in being known, as *one object* of knowledge, indicates that the unity of the nature-as-known (the objective concept) is not the same as the unity of the nature-to-be known, which is one and the same nature-to-be-known in the many things. It would appear that what is potentially one (the nature-to-be-known) in an existent plurality of things, becomes actually one (the nature-as-known) when that plurality is unified under a single objective concept. (The essence or *res* which, considered absolutely, is neither singular nor universal, is *one* as it exercises intentional existence, actually universalized; and it is *many* as it exercises real existence, potentially universal.) The objectification of the thing (*res*) is thus an actualization of the potential universal, simultaneous with the actualization of the intellect. And, thus, the intelligible in act becomes one with the intellect in act. *Secondly*, that the unity of a nature as existing in many individuals is an analogical, not a univocal, unity of being, even though the concept whereby that nature is apprehended is primarily a univocal and not an analogical concept. This must be so, for there is no way in which the one

The understanding of these four points should protect the following discussion from being misunderstood, and should prevent needless excursions into irrelevant matters. I hope this whole section devoted to preliminary clarifications frees the reader from other concerns, so that he can focus on the matters at hand. I have learned from the discussion of *The Problem of Species* how much that is a consummation devoutly to be wished.

III. REFORMULATION OF THE ISSUE

8. As I have already pointed out,[44a] the issue between the first theory (concerning species and specific natures) and the second theory was a false one, as I set it forth in *The Problem of Species,* because of an error in my exposition of the first theory. In order, therefore, to rectify the issue itself, prior to resolving it, I shall proceed, first, to indicate the origin of the error; second, to correct the error, thereby showing it to be accidental, not essential, to the principles of the first theory; and third, to summarize the resultant opposition between the second theory and the first theory as rectified.

9. The basic insight which generates the first theory is its vision of an ontological hierarchy—a hierarchy of corporeal substances which resembles the hierarchy of separate substances. Just as no two angels are, as individually existing species, equal in grade of being, so no two composite substances are equal in grade of being, if diverse in specific nature. Just as each angel has a substantial perfection lacked by its proximate inferior and lacks a substantial perfection possessed by its proximate superior, so each substance of a given specific nature has an essential perfection lacked by its proximate inferior in specific nature, and lacks an essential perfection possessed by its proximate superior in specific nature. To call this type of hierarchy *perfect* is to say that it is a perfectly ordered series, in which each member has a unique position, in which there is no coordination or equality of rank, in which each member comes before or after another in the ascending or descending scale of being. This vision of a perfect hierarchy is contained in the passage in which Aristotle compares the order of essential definitions to the series of whole numbers; and also, in another context, in the passage which compares the order of souls or substantial forms to the series of regular plane figures.[45]

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can exist in the many except *analogically.* I shall return to this point in a later discussion of the analogical note in univocal concepts of species and genera.

[44a] Vd. Part I *supra.*

[45] These two passages and the capital texts on which the first theory rests its

This basic insight is further developed by the analysis of the way in which each member of a perfect hierarchy includes *all* of its inferiors, and is included by *all* of its superiors. Confining our attention now to the hierarchy of corporeal substances, we learn from the analysis of human nature, the supreme nature in that hierarchy, how the human soul *virtually* includes not only all inferior souls, but all inferior substantial forms.[46] Because the human soul virtually includes all inferior souls and forms, human nature actually possesses every essential perfection belonging to inferior natures, and in addition possesses an essential perfection which none of these possesses. The hierarchy of specific natures is thus exhibited within human nature itself—in the hierarchy of virtually included forms, in the hierarchy of the actually possessed essential perfections, signified to us by the hierarchy of man's powers or proper accidents. What is here seen to be the structure of human nature holds similarly for every inferior specific nature: in each case, the actual specific nature of a substance virtually includes all inferior natures, and actually possesses all their essential perfections, excelling them, in each case, by possessing an essential perfection lacked by all its inferiors. The hierarchy of corporeal substances can thus be looked at in a number of ways: as a hierarchy of specific natures actually existing in individual things; as a hierarchy of virtually included forms contained in and excelled by human nature as the supreme member of the hierarchy; as a hierarchy of essential perfections actually possessed by man, and signified by his powers as these are hierarchically ordered.[47]

The principle of perfect hierarchy is the source of all the remaining points in the first theory: it is responsible for the first theory's answer to the question about the number of specifically distinct natures; it is responsible for the first theory's account of specific differentiation; and, *accidentally*, it *was* responsible for the erroneous notion about generic natures, now to be corrected. Waiving for the moment the question about number, let me explain how the error came about.

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case. The first passage is in the *Metaphysics*, VIII, 3, 1044^a 10; the second is in *De Anima*, II, 3, 414^b 20-31. For the many Thomistic commentaries on these passages, vd. the citations in *The Problem of Species*, pp. 52-60; THE THOMIST, I, 238-46.

[46] Vd. *Summa Theologica*, I, QQ. 75 and 76. Vd. *Problems of Species*, pp. 54-60; THE THOMIST, I, 240-46, for a complete citation of Aristotelian and Thomistic texts.

[47] It is interesting to discover all these traits of a perfect hierarchy in the series of whole numbers or the series of regular plane figures. Aristotle develops the comparison explicitly.

However many specific natures there are, the principle of hierarchy requires that the number of essential perfections which can be possessed or lacked must be the same as the number of natures specifically distinct; for in every case, a given specific nature possesses all the essential perfections of all its inferiors, and in addition possesses one more, by reason of which it both differs specifically from its proximate inferior, and excels it. Hence it would *appear* that, *between two natures,* proximately related as specifically distinct from one another, *there is only one essential perfection as a source of difference,* that one perfection being lacked by the inferior and possessed by the superior.[48] *The foregoing statement is true, but it is not the whole truth, and from the failure to observe that fact my error followed.* There is truth in this statement only in so far as we look at the two natures being considered from the point of view of the superior; for it does positively differ from its inferior by possessing an essential perfection which the other lacks. But we cannot define the inferior nature in terms of what it lacks, in terms of *mere privation;* nor can we avoid this difficulty by saying that we can only define the inferior nature by treating it, in turn, as a superior differing from and excelling a third nature by possessing an essential perfection that third nature lacks. Our philosophical principles of differentiation and definition must hold true even for the hypothetical situation of *only two* specific natures in the corporeal order; in which case, the inferior could not be treated as a superior, and it would be impossible, therefore, to give an intelligible account of this nature: it could not be defined merely in terms of a perfection it lacked. Mere privation cannot be the principle of the difference in a determinate nature; and a specific nature must be essentially determinate.[49]

Seeing only half the truth, I made an error which had the virtue

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[48] In this respect, the corporeal hierarchy would also appear to resemble the spiritual hierarchy, for St. Thomas tells us that, in the case of intellectual substances, division into species is not accomplished by two true differences. Vd. *De Ente et Essentia,* Ch. V. In other words, between two such species, proximately related as inferior and superior, there is only one substantial perfection, possessed by the superior, and lacked by the inferior, as a principle of difference.

[49] The error I have just called attention to not only generated the error about a common genus, which I have already mentioned; it also created what looked like an insuperable difficulty in the first theory, namely, the unintelligibility, more than that, the intrinsic impossibility of the lowest or least perfect member of a hierarchy of specific natures. Vd. the seventh objection against the first position in *The Problem of Species,* Ch. VIII, pp. 204-206; The Thomist, II, 145-47. At the time I found it unanswerable. But now that I can correct the error about a common genus, I can also completely answer that seventh objection, and thus free the first position from any intrinsic difficulty.

of being consistent with the half-truth I saw. I denied that two specific natures (proximately related as superior and inferior, and apparently separated by only one difference, the essential perfection lacked and possessed) could have a generic nature in common; or, to put it another way, I said that two substances, specifically distinct and hierarchically proximate, could not have one and the same generic nature. To have said anything else would have been to violate the half-truth of the principle of hierarchy—the half-truth which, at the time, I thought was the whole. Though I denied a *common* generic nature, I could not entirely give up the notion of *generic* nature. So, developing my error consistently, I said that each inferior specific nature was *identical* with the generic nature of its proximate superior; and that the additional perfection which the superior possessed was the principle of the difference which, penetrating and further determining the generic nature, constituted that superior's whole specific nature. I sought to explain this by saying that one and the same nature could be regarded in two ways: as actually existing in the inferior substance, and as virtually included in the actual nature of the superior substance. Regarded in the first way, that nature was specific; regarded in the second way, that nature was the generic constituent of the superior specific nature. There is, therefore, no *common* generic nature, because each specific nature has its own, and quite unique, *generic* nature, namely, the specific nature of its proximate inferior as that is virtually included in its own essence.

A little error in the beginning has serious consequences in the end—particularly if one develops it relentlessly and adheres firmly to its implications. No one could want a better illustration of this Thomistic maxim than the case at hand. For I was led on by my own thinking to two absurdities: (1) I found myself compelled to say that there was a fundamental discrepancy between the order of natures and the order of concepts; for it could not be denied that in the logical hierarchy species do participate in a common genus, whereas I thought I had succeeded in denying the occurrence of any common generic natures in the ontological hierarchy. I could not deny that the concept *animal* was commonly predicable as a genus of both *man* and *cow,* or *man* and *brute;* I could avoid the implications of this mode of predication only by saying that the word "animal" thus used signified a *logical* genus, whereas the *ontological* genus (i. e., generic nature) of *man* was signified by the word "brute"—the same word which signified a specific nature, in fact the specific nature of *cow.* Hence, I had to deny, at least implicitly, that the ordinary modes of predication followed the real

modes of being; and I had to embrace the notion of a single concept, such as *brute,* which could be predicated in diverse manners, now as the genus of *man,* now as *the* species of *cow* (*cow* signifying a race of *brute*); (2) I found myself unable to account for the duplicity of the concept *brute,* for it seemed to take on the meaning of *animal* when, taken as signifying a generic nature, it was predicated as the genus of *man,* and it seemed to diverge somehow from the meaning of *animal* when, taken as signifying a specific nature, it was predicated as *the* species of *cow.* Certainly one could not define a *man* as a *rational brute.*

I refer to these consequences as absurdities. They are that, in the light of Thomistic principles. But, at the time, blinded by the half truth I saw too clearly, I did not see them that way. The truth in the principle of hierarchy seemed worth sticking to—in spite of these difficulties, some of which I recognized at the time, but naturally treated only as apparent (hence curable) difficulties, not as real absurdities.[50] The principle of hierarchy was worth sticking to, for when its *whole* truth is grasped, it not only makes the first theory entirely sound, but also shows why the second theory is untenable. That whole truth is grasped when we see why hierarchy does not require the denial of a common generic nature; or, to put it positively, when we achieve an analysis of *genus* and *difference* that is in every way compatible with perfect hierarchy, as it obtains in both the real and the logical orders without any discrepancies between them.

10. For the sake of brevity, I shall confine my discussion to three terms: *animal, man,* and *brute;* for if it can be shown in this one case how *animal* is the common genus of *man* and *brute* (regarding these two as infima species proximately related as superior and inferior, and between which there *appears* to be only one positive difference, the perfection *rational,* possessed and lacked respectively), then the theory of the common genus and of differentiation, thus discovered, will apply to any similar set of terms. What is here said in the language of logic (considering concepts) can, of course, be also said in the language of ontology (considering natures). The logical account of a common genus, compatible with the principle of hierarchy, and the ontological account of a common generic nature, similarly compatible, must conform to one another. It will be further noted that I referred to *man* and *brute* as infima species, by which I mean that each is to be regarded as the concept of a fully determinate specific nature; neither is to be regarded as capable of any further essential differentiations. The reader must

[50] Vd. fn. 6 and 9 *supra.*

understand that, in doing this, I am not begging the question of the rightness of the first theory, which insists against the second that *brute* is a species, not a genus. At this point I am merely trying to show how the first theory can be rectified, by retaining its principle of hierarchy and rejecting its denial of a common generic nature. The proof of the rightness of the first theory, thus rectified, will come later.

The formal conditions of a solution are as follows: the genus must be indeterminate in the several respects in which its species are determinate; the genus must not only be indeterminate in these respects (i. e., in privation) but it must also be determinable; and the constitution of the several species is by the determination of the genus in the diverse respects in which it is determinable—the formal cause of this determination being, in each case, the difference. So it would appear that if there are to be two species sharing in a common genus, each determining it differently, there would also have to be two differences; each of the two species being thus constituted by the *same* genus and its *own* difference.

Now these formal conditions are readily satisfied by many sets of three terms, as, for example, taking *animal* as genus, and *herbivorous animal* and *carnivorous animal* as species.[51] For here the genus is indeterminate with respect to two modes of vegetative activity; here there are two positive differences which diversely determine the genus in the respects in which it is determinable. For the sake of generality, let us symbolize this situation by letting G represent the genus, and d_1 and d_2 the two differences; S_1 and S_2 (the two species) are then defined as $G{:}d_1$ and $G{:}d_2$.

But it will be seen at once that these conditions are not so readily satisfied by the set of three terms, *animal, man, brute;* and the reason is also apparent. *Herbivorous animal* has a perfection which *carnivorous animal* lacks; and conversely, the *carnivore* has a perfection which the *herbivore* lacks. But *man* lacks no perfection possessed by *brute,* whereas *brute* lacks a perfection possessed by *man.* The relation between *carnivore* and *herbivore* as species violates the principle of hierarchy.[52] Hence we must conclude that

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[51] Vd. Aristotle, *Historia Animalium,* I; *De Partibus Animalium,* I, 3. Cf. *Anal. Post.,* II, 13; *Topics,* VI, 6.

[52] Therefore, from the point of view of the first theory, adhering to the principle of hierarchy, they cannot be regarded as genuine or *proper* species. It makes no difference, therefore, whether the second theory regard *carnivore* and *herbivore* as sub-genera of *animal* or as infima species; nor does it make any difference to the present argument that there may be a third coordinate species, *omnivorous animal.* The only point being made here is that according to the first theory, *herbivorous, carnivorous,* and *omnivorous* cannot be essential perfections, because

if the symbols G:d_1 and G:d_2 represent *the only way* in which two species can have a common genus, *then a common genus is absolutely incompatible with the principle of hierarchy.*

That conclusion can be avoided. There is nothing wrong with the formal conditions to be met; and they can be satisfied by the terms *animal, man, brute;* but not in the same way as by *animal, herbivore, carnivore.* The analysis is as follows. The genus *animal* is indeterminate with respect to the *one* essential perfection *rational,* but in *two ways.* It is indeterminate because the sensitive nature conceived as *animal* is conceived as in privation of rationality. But that one perfection can either be *possessed* or *rejected.* The rejection of rationality is not the same as the privation of it: the negative is not the same as the privative. Hence, in privation of rationality, *animal* is both potentially *rational* and potentially *irrational*: *rational* here signifies a positive difference, and *irrational* a negative difference; and we must use the word "non-rational" to signify the privative state of *animal,* conceived as determinable in two ways with respect to one and the same essential perfection, namely, by the determination of a positive and of a negative difference. Again, for the sake of generality, let us symbolize this situation by letting G represent the genus; let the letter "x" stand for the one essential perfection possessed by the superior species and lacked by its proximate inferior; but since that inferior does not merely lack the perfection in question (for then it would not differ from the genus which is in privation with respect to this perfection), but rather positively rejects or excludes this perfection, let us symbolize the difference which, with the genus, constitutes the superior species by dx, and the difference which, with the same genus, constitutes the inferior species by d(x). Thus, *man* is defined as *rational animal,* G:dx; and *brute* is defined as irrational animal, G:d(x).[52a]

A comparison of the two theories of genus and difference shows the following fundamental points of divergence between them. (1)

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they are not ordered hierarchically; and hence they cannot be the principles of essential differentiation.

[52a] I am here using the symbols G:dx and G:d(x) with absolute generality, despite the fact that I have exemplified their signification by such terms as *animal, man,* and *brute.* G stands for any genus, not just for *animal,* x stands for any essential perfection, not just for *rational,* dx and d(x) stand for any pair of positive and negative differences (determinations rooted in the same perfection), and hence G:dx and G:d(x) stand for any species in a common genus, not just *man* and *brute.* I shall subsequently, in Diagram 1 and in the accompanying text, use these symbols, G and x, with more restricted meanings, but the principle of symbolization will remain the same.

In the one case, the genus is in privation with respect to only *one* perfection and must therefore by symbolized by G-x (where -x represents the privation of x); in the other case, the genus is in privation with respect to *two* (or *more*) perfections, and must therefore be symbolized by G-1,-2. (2) In the one case, the diverse differences, diversely determining the genus to constitute different species, are always related as positive and negative with respect to one and the same perfection, and as possessing or rejecting that perfection must be symbolized by dx and d(x); whereas, in the other case, the diverse differences are always both positive, because each is a difference arising from the possession of a distinct perfection, and hence must be symbolized by d_1 and d_2. Despite these crucial divergences, both theories satisfy the same formal conditions, namely, a genus indeterminate and determinable in diverse ways; and a diversity of differences, neither of which is a mere privation.

Let us name these two theories of genus and difference, for the sake of brevity of reference. Let us call the theory which is symbolized by G-x, dx, and d(x), the *first* theory, because it is the only theory of genus and difference which is compatible with the principle of perfect hierarchy, and hence it is the theory of genus and difference which must be held by the *first theory of species.* Let us call the theory which is symbolized by G-1,-2, and d_1, and d_2, the *second* theory, because it is the theory which is absolutely incompatible with the principle of perfect hierarchy, and hence it is a theory of genus and difference which must be held by the *second theory of species, to whatever extent that second theory denies the principle of perfect hierarchy.*[53] And we can summarize what we have learned so far by saying that if the only account which could be given of genus and difference were that offered by the second theory, then the first theory of species, adhering to the principle of hierarchy, would have to reject the notion of a common genus and diverse differences; and it would be right in doing so, because such notions are absolutely incompatible with its own fundamental principle. Fortunately, indeed, the notion of a common genus and diverse differences need not be denied in order to affirm a perfect hierarchy of species, for there is, we now see, a theory of genus and difference, thoroughly compatible with hierarchy, which explains the

[53] What I have here called the first and the second theory of genus and difference, I shall later call, respectively, the theory of the essential genus and of essential differentiation, and the theory of the accidental genus and of accidental differentiation. This manner of speaking will be justified when I show that the second analysis belongs to a theory of "accidental species"—races, sub-species, accidental concretions—or what Maritain has called improper species. Cf. fn. 93 *infra.*

commonness of the genus, and the *diversity* of the differences, in the case of two species differing *inter se* with respect to only one essential perfection, possessed by the one, and rejected by the other. *Thus is the first theory of species completely rectified in the line of its own analytic tendency.*[54]

To expound this rectification fully, three more points must be made. (1) There may be some who do not see the significance of the first theory of genus and of difference. For them let me propose an analogy which will express that theory in the basic metaphysical terms of potency and act. The human intellect is in potency to the truth. As in pure potency, the intellect is conceivable as in privation with respect to the truth. But, as in potency (and privation), the intellect is determinable with respect to this *one* perfection (truth) in two ways: it can be determined by knowledge and by error. When it is actualized by the possession of the truth, it has knowledge; when it is actualized by the rejection of the truth, it is in error. And we speak of the mere privation of truth as ignorance. Although error is like ignorance in one respect (privation of truth), it is unlike ignorance in another, for error is an actual negative condition, a rejection of the truth, whereas ignorance is merely a privative condition of non-possession. And error is just as much an act of the intellect (albeit a vicious one) as knowledge is, for both involve the intellect in judging of what is and what is not, whereas ignorance which is a privation has no actual existence at all in the

[54] The half truth I saw in the principle of hierarchy is now enlarged into the whole truth. It is true that between two species, proximately related, there is differentially only one essential perfection. It is true also that that one perfection is possessed by the superior and lacked by the inferior (and that the superior lacks no perfection possessed by the inferior). But that one perfection is the root of two determinations of the genus which is a nature conceived as *simply* in privation with respect to that perfection: the two determinations are related as positive and negative, i. e., positive, the possession of the perfection; negative, the rejection or exclusion of the perfection. Hence there are two differences, not one; for each real determination of the genus, in a respect in which it is indeterminate, is a difference. If we use the words "true difference" to name the positive determination, then, of course, we must say that there is only one true difference between two proximately related species; but clearly that is a wrong manner of speech, for the negative determination is just as truly a difference as the positive. Hence, we must say that there cannot be two positive differences between two species proximately related, for there is only perfection as the root of their differences, that one perfection being the source of both a positive and a negative difference. The reason for my error is now obvious: it arose from confusing *rational* as signifying the perfection with *rational* as signifying the positive difference; and from confusing *irrational* as signifying the negative difference with *non-rational* as signifying the privation of the perfection which makes the genus *animal* doubly indeterminate and doubly determinable by both *rational* and *irrational* as true differences.

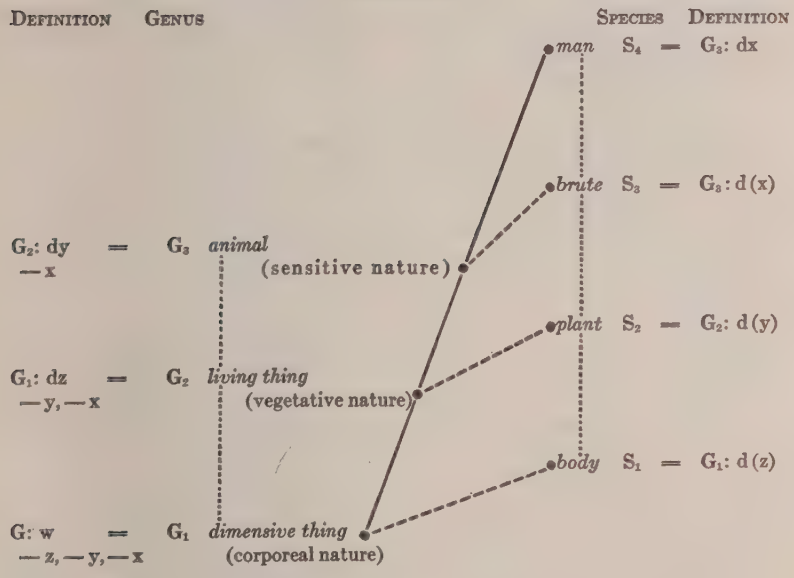
order of the real. The potency and privation of the genus *animal* is like the potency and privation of the intellect in a state of ignorance; the perfection *rational* is like the perfection *truth,* for it is with regard to these perfections that *animal* and intellect are, respectively, in privation: *animal* is *non-rational* (non-possession of *rational*), the intellect is ignorant (non-possession of truth); *rational* and *irrational* as positive and negative differences, are diverse determinations or actualizations of a double potentiality in *animal,* just as knowledge and error are, as positive and negative states of mind (intellectual virtue and vice), diverse determinations or actualizations of a double potentiality in the intellect; and in both cases the diverse positive and negative determinations are with respect to one and the same perfection.[55]

(2) There is no longer any problem about the predicability of the genus *animal* of such diverse species as *brute* and *man.* It is not only predicable of them both, but predicable commonly, as a genus, and in the same way, as their proximate genus. Nor is there any difficulty about the case in which we predicate *animal* of both *man* and *cow,* although it is necessary to observe that this case is not identical with the previous one. For, according to the first theory of species, *cow* is not *properly* a specific concept: *cow* signifies a race, an accidental subclass of the species *brute.* Hence, when we conceive the specific nature of *cow* by the concept *brute, animal* is predicable of both *cow* and *man,* commonly as a genus, but *not in the same way,* for *cow* is not a species of *animal,* nor even a species of *brute;* hence *animal* is the genus of *cow* only by

[55] It may be asked in what way the intellect *knowing* includes and excels the perfection possessed by the intellect *erring,* as *man* includes and excels the perfection possessed by *brute.* The analogy here is not perfect because there is no third term related to the intellect *erring* as an inferior species (*plant,* let us say) is related to *brute.* But the analogy is not altogether imperfect, because the intellect *knowing* includes the quasi-perfection of the intellect *erring*: for there is no absolute error; and in so far as all error contains some element of the truth, the intellect *erring* is more determinate with respect to truth than the ignorant intellect; furthermore, he who knows not only knows what is true, but what is false, and in this the state of knowledge includes and excels the state of error, transforming it, of course, in including it, just as the rational nature includes the sensitive perfection *eminenter,* not simply.

I have thus explained what is logically conceived as privation, negation, and possession, in terms of potency and act. Such explanation is necessary to give the logical account of genus and difference metaphysical meaning, for in the order of the real there are no *privative* or *negative* beings. I shall later give another metaphysical rendering of this analysis in terms of matter and form, again translating *negation* and *privation* into metaphysical terms. See Part V, Section 15, (2), *infra.*

DIAGRAM 1



Legend: dx and d(x) signify possession and rejection of perfection x (*rational*)
dy and d(y) signify possession and rejection of perfection y (*sensitive*)
dz and d(z) signify possession and rejection of perfection z (*vegetative*)
— x, — y, — z signify the privation of the perfections x, y, and z.
w signifies the ultimate generic perfection (*corporeal*)
G signifies the genus *substance*

Note: The ultimate generic perfection w is never the root of a difference, positive or negative, for it is possessed by every species. Because w is not the root of any difference, G_1 is not defined by G: dw, but simply by the perfection w itself as a first determination of the summum genus *substance*. In each case, the genus is, in the vertical axis, on a lower level than its negatively determined species, to indicate that that species is superior in degree of determinacy, even though not superior in grade of perfection possessed.

virtue of what is properly the species to which *cow* belongs as one of its races, namely, *brute*. Yet it can be said that *animal* signifies the generic nature which is both common and proximate to the specific natures of *man* and *cow*, even though *cow* itself does not properly signify a specific nature, for it signifies a specific nature (conceived as *brute*) under a certain mode of further accidental determination.

(3) Thus, we see that the first theory of species (rectified by a theory of genus and of difference compatible with the principle of hierarchy) can affirm, without qualification, that modes of predication perfectly follow modes of being. That being so, there must be a perfect parallelism between a logical hierarchy of concepts, arranged according to their formal properties as *proper* species and genera, and an ontological hierarchy of natures, in which the disposition of natures as specific and generic is seen. To show this, I shall diagram a hierarchy as that is conceived according to the first theory. The members of this diagram will be equally interpretable in logical and ontological terms. In setting up this diagram, I will proceed on the hypothesis, to be proved, that there are only *four* proper species (in the logical order) and only four specific natures (in the real order of corporeal substances).

In interpreting this diagram it is important not to be disturbed by the actual words which have to be used to name the various members. Familiar words are available to name the four specific members; but, except in the case of *animal*, there is no single word, nor even always a familiar and entirely satisfactory phrase, to name the generic members—if one wishes to avoid duplicating the same word as the name for a specific and generic member.

Let me explicate the diagram, for by doing so I can give a summary account of the first theory of species, genus, and difference. (I shall speak the language of logic in doing this.) (1) On the hypothesis of four species, there are only three genera; but there are six differences, since there are three essential perfections each of which can function as the root of two differences, a positive and a negative. There is, of course, a fourth essential perfection, W, the lowest in rank, which is the only source of determination in the most indeterminate genus, G_1. (2) Except for the highest species, each species is determined by a negative difference, the perfections it possesses accruing to it from the fact that its proximate genus is determined by a positive difference; thus, for example, *brute* is *irrational*, d(x), but it is also *animal*, G_3, and as animal it is *sensitive*, dy; further, since the genus *animal* includes the remote genera, G_2 and G_1, *brute* not only possesses the perfection y, but also the

perfections z and w. Each of these species is, therefore, seen to possess all the perfections possessed by its inferiors, to possess in addition one perfection they lack, and to be determined in its unique nature by rejecting the perfection possessed by its proximate superior. (3) Each of the genera is at once the proximate genus of a species and the remote genus of that species' proximate superior, through being a genus of that superior's proximate genus; here, too, there is an exception, for the genus *animal,* which is highest in the hierarchical order of perfections, is at once the proximate genus of two species. (4) Like the order of species, the order of genera is a hierarchical order of ascending degrees of perfection: in which the lowest genus signifies the least degree of perfection (w), and each higher genus signifies more perfection and less privation. This is indicated by the use of –x in the definition of G_3, of –y, –x in definition of G_2; and of –z, –y, –x, in the definition of G_1. Viewed positively, G_1 has the perfection w, which is here simply a principle of determination and not of difference; G_2, the positive difference whose root is perfection z, and G_3 the positive difference whose root is perfection y, as well as, of course, perfection z because G_3 includes G_2. (5) The complete definition of the genera must include privative notes; whereas the definition of the species includes only a positive note (possession of perfections) on the part of its genus, and a negative note (rejection of a perfection) on the part of its difference. Again, there is an exception in the case of *man,* the highest species, constituted by two positive notes, on the part of both its genus and its difference. (6) Only the two highest species have a genus which is both common and proximate; in every other case, considering a pair of proximately related species such as *brute* and *plant,* the proximate genus of the lower is always the remote genus of the higher, remote by *one* remove; and, by extension of this principle, the proximate genus of the lowest species is necessarily the remote genus of the highest by *two* removes. (7) There is no genus which is the common and proximate genus of two other genera; the only genus which is a genus of two other genera is the lowest genus and this is the proximate genus of G_2 and a remote genus of G_3. (8) In the case of *animal, man* and *brute,* the genus resembles the lower of its two proximate species more than the higher, in the sense that it is privative with respect to the same perfection, with respect to which the species is negatively determined; in the case of every other genus, the genus similarly resembles its proximate species more than it does the proximate higher genus. This is indicated by the use of dotted lines in the diagram to indicate the motion of a genus toward the negatively

determined member. (9) In the hierarchy of species, the lowest and the highest are each unique, but not in the same way, for in the case of the highest species, its special perfection is signified by a positive difference, whereas in the case of the lowest species, its only perfection, signified by the respect in which its genus is determinate, is not the root of a negative difference.

These nine foregoing points formulate the doctrine of a logical hierarchy of species and genera. The one indispensable hypothesis underlying this formulation is the principle of hierarchy itself, as an order in which each member has a higher or lower grade of perfection. It should be added, of course, that only concepts which are proper species and proper genera (i. e., concepts of truly specific and truly generic natures) can be so ordered. That four should be the number of species is not an indispensable hypothesis for working out of the doctrine of hierarchy itself; the number might be smaller or greater, and it would be *possible* for all of the same principles to obtain. But what is possible need not be actual; that there are only four proper species is a point of actual fact, to be discussed later.

It is unnecessary to repeat these nine points of doctrine in the language of ontology: everything which has been said in terms of species and genera (specific and generic concepts) can be restated, without a single discrepancy, in terms of natures, specific and generic.[56] What is necessary, however, to complete this exposition is to diagram the radically different view of hierarchy which is involved in the second theory of species, genus, and difference. The contrast between these two views will help us to formulate the issue as sharply as possible. Here, as before, I shall present a diagram which is capable of being interpreted in ontological as well as in logical terms. In setting up this diagram, I will proceed on the hypothesis, to be disproved, that there are *many more* than four proper species, and I shall signalize this point by treating *brute*

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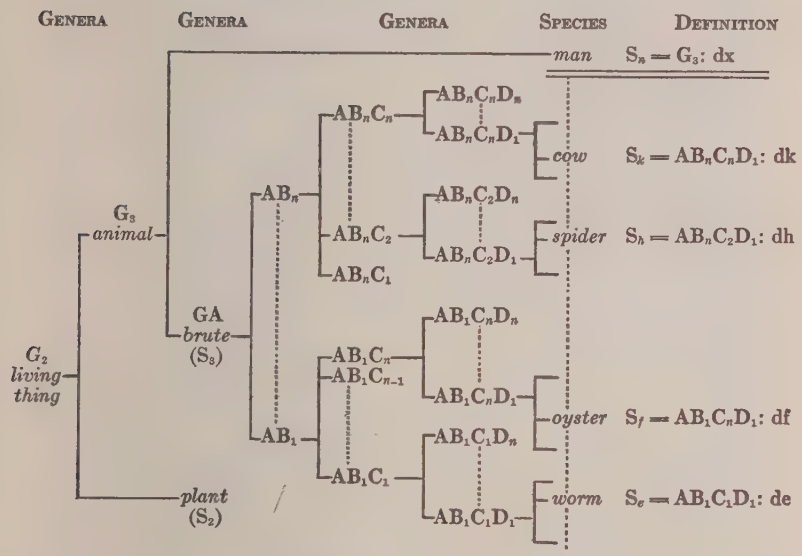
[56] Vd. fn. 55 *supra*. There is a tenth point of doctrine which is, however, purely logical. It arises from a consideration of the members of the logical hierarchy in terms of their extension and comprehension as concepts. The genera, of course, have greater extension and less comprehension than any of the species, and the lowest genus has the greatest extension and the least comprehension. But the species considered among themselves cannot be compared with respect to comprehension and extension, for they are all equally determinate as concepts, each definable as an infima species. It should be noted, of course, that this doctrine can dispense with the qualification *infima*, for every concept which is properly a species is an infima species in the sense that it is that whereby a specific nature is conceived; and there is no need to regard a genus as a *non-infima* species because it mediates between a species and its remote genera.

DIAGRAM 2



Legend: GA: *brute*, sub-genus of *animal*, defined here as S_3 is in Diagram 1.

S_n: *man*, highest infima species of *animal*, defined here as S_4 is in Diagram 1.

$AB_1 \ldots . AB_n$: sub-genera of *brute*, each determined by a positive difference, signified by the numbers from 1 to *n*.

$\left\{\begin{matrix} AB_1C_1 \ldots . AB_1C_n \\ AB_nC_1 \ldots . AB_nC_n \end{matrix}\right\}$ sub-genera of the sub-genera on the B level, each similarly determined by a positive difference.

$\left\{\begin{matrix} AB_1C_1D_1 \ldots AB_1C_1D_n \\ AB_1C_nD_1 \ldots AB_1C_nD_n \\ AB_nC_2D_1 \ldots AB_nC_2D_n \\ AB_nC_nD_1 \ldots AB_nC_nD_n \end{matrix}\right\}$ sub-genera of the sub-genera on the C level, each similarly determined by a positive difference.

$\left\{\begin{matrix} S_e, S_f \\ S_h, S_k \end{matrix}\right\}$ infima species, having their proximate genera on the D level of the hierarchy, each determined by a positive difference, signified respectively by de, df, dh, and dk.

Note: The numbers and letters here used must not be taken as symbolizing an exhaustive enumeration of the sub-divisions within the genus *brute*. They are used to signify only the multiplicity of the divisions of sub-genera into sub-genera and ultimately into infima species. It will be noted that not all the sub-genera are divided, nor are all possible divisions carried out, in order to prevent too great a complexity in the diagram. In the definition of each of the four infima species, inferior to *man*, the last difference is added to a summation of the generic determinations by which the ultimate genus being divided, *brute*, is contracted in the direction of that species. The dotted lines in the vertical axis of the several columns of the diagram (generic and specific) are intended to signify intermediates between the terms which have been indicated. They are not intended to signify an order from lower to higher in the scale of being, for that may or may not be the case.

as a genus capable of differentiation into sub-genera and ultimately into proper species.[56a]

I need not bother to state all of the characteristics of the hierarchy of terms set forth in Diagram 2. They are familiar points learned in elementary logic courses. I wish only to comment on Diagram 2 in relation to Diagram 1. (1) In the first place, it should be noted that I have included a part of Diagram 1 in Diagram 2. This is necessary, because the second theory must agree with the first on two facts: namely, that *man* is a *rational animal,* and that *brute,* defined as *irrational animal,* is the other member dividing animal as the proximate genus. (2) What is here done for *brute* could be similarly done for *plant* and *body,* regarding them as genera rather than as species: in each of the latter cases, the type of analysis made in Diagram 1 would be repeated; and in each case, *plant* and *body* would be treated as genera, and subdivided into sub-genera and ultimately into infirma species, exactly as is done here in the case of *brute.* (3) Below *brute* all the divisions into sub-genera and species result from *positive* determinations of the genus in respects in which it is indeterminate and determinable: because of this fact, a genus may always be divided into more than two sub-genera or more than two species, whereas, in contrast, genera which are determined by a positive and a negative difference can never be subject to division into more than two species. (4) Within the genus *animal, brute* is hierarchically inferior to *man;* but within the genus *brute,* the sub-genera *may* or *may not* be hierarchically ordered; and so on down to any set of infima species within their proximate genus—they may or may not be hierarchically ordered. Now there are these possibilities: (a) that all of the species of *brute* taken together are hierarchically ordered as inferior to *man,* by reason of their participation in the genus *brute,* but that within the genus *brute* itself, there is no further hierarchical ordering; (b) that there is a hierarchical ordering among the sub-genera of *brute,* at higher levels of generality, but not at lower; (c) that there is a hierarchical ordering among the sub-genera of *brute* even on the lowest level of generality, proximate to the infima species; (d) that there is a hierarchical ordering, not only among all the sub-genera of brute at each level of these sub-genera, but also among each set of infima species dividing their proximate genera.

It is only the various possibilities enumerated under the fourth

[56a] If we took the biologist's count of the number of species in the genus *brute animal,* Diagram 2 would have to become an extremely complicated affair, representing an orderly arrangement of 822,765 members.

point above which need concern us any further. I shall later show why, as a matter of fact, only the first possibility can be actually the case: because no set of terms which are constituted by diverse positive differences, rooted in diverse perfections, can be hierarchically ordered as *essentially* higher and lower *inter se*. But proceeding hypothetically, though contrary to fact, and even taking the fourth possibility as the one which would realize to the greatest degree the principal of hierarchy among the infima species of *brute*, let me point out why the second theory, as represented in Diagram 2, denies the principle of *perfect* hierarchy. For according to this theory, even though each of the infima species of *brute* can be ordered as higher or lower than another in grade of being, all of them, taken together, are equal in their inferiority to *man*, for they all equally differ from man by being *brute* generically. The generic nature that is common to every one of these species is conceived as *irrational animal*, and hence they are all equally inferior to *man*, whose specific nature excels theirs by the possession of the one essential perfection which they all equally reject.

Proceeding on the hypothesis that *cow . . . spider . . . oyster . . . worm* signify truly specific natures (whether that is the case or not makes no difference), we can see that a hierarchy of species, in which the term *man* is treated as a species along with *cow, spider, oyster, worm*, etc., is radically different from the hierarchy of species, in which *man* is treated as a species along with *brute, plant*, and *body*. We focus on the precise point of difference when we see that in Diagram 2 there is a *generic interruption* between the highest of *brute* species and *man*, an interruption which reduces all the *brute* species to one hierarchical level with respect to *man*. (This generic interruption is symbolized in Diagram 2 by the double line which separates *man* from all the species of *brute*). That is why I have called the hierarchy envisaged by the second theory an imperfect hierarchy of species (subject to many generic interruptions and levelings), whereas, in contrast, the hierarchy of species envisaged by the first theory is *perfect*.[57]

[57] There are as many generic interruptions in the hierarchy of infima species in Diagram 2 as there are different levels of sub-genera included under *brute*; for if, on each level of sub-genera (symbolized in Diagram 2 by the letters B, C, and D), there is a hierarchical ordering, then the terms which are hierarchically ordered on a lower level will be equalized in rank by reason of the rank which their genus has in relation to the rank of the genus of some other set of terms on the next level. Thus, for example, all the terms enumerated as AB_1C_1—$AB1C_n$ will be equal in their inferiority to the set of terms enumerated as AB_nC_1—AB_nC_n if the proximate genera of these two sets of terms, AB_1 and AB_n respectively, are themselves hierarchically ordered as lower and higher; and simi-

Only one further point need be made, before we proceed to the summary of the issue. It concerns the word "hierarchy" itself in which, unfortunately, some ambiguity still remains. It will be seen, by examining Diagram 1, that both the hierarchy of species and the hierarchy of genera (both, by the way, perfect hierarchies) are orderings of terms, signified as higher and lower by their disposition above or below one another in the vertical axis of the diagram.[57a] In sharp contrast, we find that, in Diagram 2, there is a hierarchy of terms in the horizontal axis of the diagram, as well as in its vertical axis. In the horizontal axis, there are the various levels of genera, sub-genera, down to infima species, and reading from left to right we pass from more general concepts to less general concepts—the level of generality itself being determined by the same degree of extension and a reciprocal degree of comprehension in all the concepts on that level.[58] Here, then, is a third meaning of the word "hierarchy" which must be distinguished in all subsequent discussion. Let me enumerate the three meanings, and indicate how I shall qualify the word "hierarchy" to give it a univocal meaning in each usage: (1) by "perfect hierarchy" I shall mean

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larly in every other case. In short, returning to the four possibilities enumerated in the text under point "(4)," the one which achieves a hierarchy among the specific terms "(d)," sets up the most imperfect hierarchy of these terms, because subject to the greatest number of generic interruptions; whereas the one which fails most to achieve any hierarchy among the specific terms "(b)," sets up the least imperfect hierarchy of these terms, because subject to the fewest generic interruptions. But it is also true that in the latter case, there is no hierarchy at all of the specific terms, but only of genera. This indicates an insuperable difficulty in the second theory. There is one other cause of imperfection in a hierarchical disposition of terms. If manifold differentiae are employed, instead of single differentia, two items may each be superior and inferior to the other in different respects. If one tries to order a set of items, which are distinguished *inter se* by manifold differentiae, no single arrangement of them is possible. There will be several different ways of ordering them as lower and higher in being, according to the particular characteristics chosen. I call this the fact of multilinear, in contrast to unilinear, ordering. A hierarchy is imperfect if it is subject to generic interruptions and multilinearity. Vd. fn. 122, *infra*, wherein it will be seen that a hierarchy of accidental terms is necessarily imperfect in both these respects.

[57a] It will be noted that each genus (except animal) is, in the vertical axis, below the species to which it is connected by a broken line, as well as below the higher genus, to which it is connected by an unbroken line. This is done to indicate that each genus (except *animal*) is, on the one hand, inferior to its proximately higher genus in grade of determinate perfection, and, on the other hand, inferior to its species (i.e., its other dividing member) in degree of determinacy, though not in grade of perfection possessed. The genus *animal* is similarly inferior to *man*, on the one hand, and to *brute*, on the other.

[58] In Diagram 2, as in Diagram 1, all the "properly" specific concepts have the same extension and comprehension because, as infima species, they are equally determinate.

the disposition of concepts (or natures) as in the vertical axis of Diagram 1, whether these concepts (or natures) be species or genera; (2) by an "imperfect hierarchy" I shall mean the disposition of concepts (or natures) as in the vertical axis of Diagram 2, whether these concepts (or natures) be species or genera; (3) by an " extensive hierarchy " I shall mean the disposition of concepts (or natures) as in the horizontal axis of Diagram 2, in which the ordering, from left to right, is according to the level of generality, determined as to extension or comprehension.[59] The extensive hierarchy is the familiar one set forth in elementary logic books: it represents the steps of progressive division by which one passes from a summum genus, in any category, to the infima species. This extensive hierarchy must never be confused with either the perfect or the imperfect hierarchy which represents steps of progressive ascent or descent in a series of terms arranged according to perfection of being (whether the terms be natures, specific or generic, or the concepts by which these natures are conceived).[60]

11. We are now prepared to summarize the issue beween the first and second theory, reformulated in the light of the rectification of the first theory.

In the first place, it should now be apparent why the truth is not a simple synthesis (in the Hegelian manner) of the first and second theories, taking the truth from each, and excluding their falsehoods. Yet I can see why some might think this to be the case: for the second theory was certainly right in its insistence upon a genus commonly predicable of diverse species; and if the first theory is right in its insistence upon only one essential perfection (between two proximately related species) as the root of the positive and the negative differences which diversely determine the species, why, it may be asked, cannot these two points be combined into a single true theory? Why, in short, is not the first theory, as rectified of its error about the common genus, the true synthesis? The answer

[59] I have chosen the word " extensive " to name this third kind of hierarchy, not because the criterion of extension is more fundamental than the criterion of comprehension, in determining the various levels of generality, but because, as I shall later show, this hierarchy is developed by acts of extensive (total) abstraction, in contrast to intensive (formal) abstraction.

[60] The Tree of Porphyry is guilty of having made precisely this confusion. Anyone who studies Diagrams 1 and 2 will see that the Tree of Porphyry tries to combine them without recognizing the radical difference between the way terms are disposed in the vertical and in the horizontal axis. I shall return to this point later, in Part VI, when I offer an historical hypothesis as to the origin and persistence of false or confused theories about species, genera, differences—and their hierarchies.

is as follows: although the first theory rectified now agrees with the second in affirming a common genus, its theory of the common genus diverges radically from the second theory's account of the common genus. The divergence is on these four essential points. (1) According to the first theory, the common genus is, through privation to one perfection, indeterminate in two respects, for it is determinable by the possession and the rejection of that one perfection; whereas, according to the second theory, the common genus is, through privation to two or more perfections, indeterminate in two or more respects, for it is determinable by the possession of each of these perfections. (2) According to the first theory, the differences which constitute proximately related species are always related as positive and negative determinations (the possession and rejection of one and the same perfection); whereas according to the second theory, the differences which constitute proximately related species are always related as positive determinations, each with respect to a diverse perfection. (3) According to the first theory, if two species are proximately related in a common genus, the superior *must* have all the perfections possessed by the inferior, and in addition one perfection the rejection of which constitutes the inferior species as determinate; whereas, according to the second theory, if two, or more, species are proximately related in a common genus, each one *may* have a perfection lacked by the others, and in turn reject the perfections possessed by these others; thus, considering two species in a common genus, each positively determined by a distinct perfection, let us say j and k, it follows that the possession by the one species of perfection j involves the rejection of k, and conversely in the case of the other species. This point, which is crucially important, can be summarized by saying that in the second theory, the differences are related as contraries because the diverse perfections, in which they are rooted, are so related; whereas in the first theory, the differences are contrary only as positive and negative determinations rooted in the same perfection, and there is no contrariety among diverse perfections. (4) According to the first theory, each genus can be subject to only a twofold division, by reason of its differentiation by a positive and a negative difference; whereas according to the second theory, a genus can be subject to a manifold division, by reason of its differentiation entirely by positive differences.[60a]

[60a] With respect to (4) above, it should be noted that, in Diagram 1, each genus (except *animal*) is divided by two terms unequal in their degree of determinacy, for one is always another genus, and the other is always a species;

Hence we see that no resolution can be reached by trying to combine the first and the second theories. Then what is the situation? Here are the possibilities.

(1) Either exponents of the second theory agree entirely with the first—with respect to every point in its doctrine of species, genus, difference, and hierarchy—or they still disagree with the first theory as now rectified. If they do agree, then, for the most part, our problem is solved. It would but remain to show that only a very small number of species—probably not more than four—is compatible with the doctrine as agreed upon. Let us, however, take the other horn of the dilemma, that of disagreement, and see what the points of disagreement might be.

(2) Exponents of the second theory may still disagree about the principle of perfect hierarchy. This would be the maximum disagreement, for such disagreement would include disagreement about the character of the common genus, about the mode of differentiation of that genus, and about the number of species.[61]

(3) Exponents of the second theory may agree with the principle of hierarchy, but insist that the right form of that principle is the imperfect, not the perfect, form. Taking this position, they will agree that there is a perfect hierarchy of such ultimate generic terms as *body, plant, brute;* but insist that there is only an imperfect hierarchy of infima species, because they are reached by the progressive differentiation of the ultimate genera, through many levels of sub-genera, and hence there are many generic interruptions of the hierarchy of infima species; hence it is imperfect. Furthermore, if they take this position, the second theory must combine two principles of hierarchy—the extensive hierarchy, in the horizontal axis, and the imperfect hierarchy, in the vertical, the former not being a hierarchy of degrees of perfection in being, but only a hierarchy of degrees of indetermination in being. Furthermore, if

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whereas, in Diagram 2, each genus (except *animal*) is divided into two or more terms equal in their degree of determinacy (i. e., having the same rank in the extensive hierarchy). And the reason why *animal* is an exception both times is precisely opposite for the two theories.

[61] It is obvious that the second theory cannot deny perfect hierarchy without denying the mode of differentiation represented in Diagram 1, and if that mode of differentiation is denied, the character of the common genus, as determinable in a twofold way by a positive and a negative difference rooted in one and the same perfection, is also denied. It will certainly follow, then, that the number of species must be more than the five named in Diagram 2, but how many more is not definitely indicated. That will depend, of course, upon how far the second theory goes in its division of such genera as *brute, plant,* and *body.*

they take this position, the exponents of the second theory must combine two different accounts of the nature of the common genus and of the mode of differentiation, for it must employ the first theory's account when it treats of the differentiation of *animal* into *brute* and *man* (and so in all similar cases), but it must employ its own divergent account when it treats of the differentiation of *brute* into sub-genera, and these in turn into infima species (and so in all similar cases). Finally, if exponents of the second theory take this position, they must affirm a much larger number of species than can be agreed to by the first theory.

(4) Exponents of the second theory may agree to the principle of perfect hierarchy, and to all that that implies with regard to species, genus, and difference, and still try to insist that there is a larger number of species than four or five, or any such small, definite number.

Of these four possibilities, let us eliminate the first at once, for that would give us a resolution of the problem of species without demonstrating the necessity of a solution in terms of the truth of the first theory.

With respect to the three remaining possibilities (of disagreement), we can reduce the whole issue to a single point, framed by the question, *whether the order of species is a perfect hierarchy?* If the negative answer to this question can be demonstrated to be *impossible,* then the affirmative answer is *necessary,* for the alternatives here have been shown to be exhaustive and exclusive. If the second theory cannot hold to the negative answer (i. e., if it cannot deny the principle of perfect hierarchy and all that flows from it with respect to the nature of a genus and its mode of differentiation), then the second theory is absolutely untenable.

We can now narrow the issue even further, by making the proof or disproof of the principle of perfect hierarchy turn on the question: *whether* brute *is a species* (*infima, of course*) *or a genus?* If it can be shown that *brute* must be a species, and cannot be a genus, then it follows with obvious necessity that *plant* and *body* must also be regarded as species, and not as genera: in which case, not only is the second theory shown to be untenable in its denial of a perfect hierarchy, but it is also shown to be wrong in its insistence on a larger number of species than four, or perhaps, five.

If these things can be shown, the issue constituted by *any* disagreement between the second theory and the first theory, as rectified, will be resolved in favor of the latter. Yet one more step will remain, for it will be necessary to show that the first theory, as rectified, is not only justified in its opposition to the falsity of the

second theory, but that it is also free, in itself, from all internal difficulties: in short, that no objections to it remain unanswered. When this is accomplished, as I think it can be, the problem of species ceases to be a philosophical, and becomes an historical, problem.

The issue now being both clear and sharp, I turn at once to its resolution.

IV. THE ISSUE RESOLVED

12. *Disproof of the second theory.* The principle of perfect hierarchy is not readily susceptible to direct proof; but it can easily be proved by an indirect form of argument, by a *reductio ad impossible*.[62] It may be that the principle of perfect hierarchy is self-evidently true—immediately known by anyone who fully understands the notion of species itself. However that may be, the principle does not appear to be self-evident to some, who speak of species, genera, and differences, in a manner incompatible with the principle. And even if the principle be self-evident, it is not improper to explicate its evident truth by having recourse to indirect arguments, showing the impossibility of its denial.

Indirect argument always rests its case upon certain facts to which the opponent *must* also agree. Because he agrees to these facts, the argument will run, he cannot deny the ultimate proposition in question. Now, in this case, the facts upon which the argument for perfect hierarchy rests are the facts of human nature. To make the grounds of the argument explicit, I shall state three propositions about *man,* on which there must be agreement before we begin. (1) Man is a rational animal. (2) Man has all the essential perfections possessed by every other kind of corporeal creature, and excels them all by possessing, in addition, an essential

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[62] That is why I said, at the end of the preceding section, that I was going to show the denial of a perfect hierarchy to be impossible, and thus indirectly to show the necessity of the principle, rather than attempt a direct proof of the principle. In *The Problem of Species,* the reply to Objection 1 against the first theory includes two attempts to prove the principle of perfect hierarchy. The first of these, a *direct* argument stated in two forms, *fails,* because it tries to establish the principle in terms of the fact that a common genus is impossible. Vd. *op. cit.*, pp 168-176; The Thomist, II, 108-117. The argument is not entirely false: it does contain the truth that if by "common genus" is meant a genus determinable by two or more positive differences, then there can be no common generic natures if there is a perfect hierarchy of specific natures. But it will be seen at once that the argument in this form begs the question, for it argues from the principle of hierarchy to the denial of a certain type of common genus. Whether there is a direct metaphysical proof of the principle of hierarchy, in terms of the notions of common matter and substantial form, I am not sure. For the present, suffice it to point out that the second, and indirect, proof of hierarchy, given in *The Problem of Species,* was quite sound, and will be used here. Vd. *op. cit.*, pp. 176-180; The Thomist, II, 117-21.

perfection which is man's alone. (3) Man is the end of all generation in the order of corporeal creatures.[62a]

These three propositions, I say, contain implicitly the truth of the principle of perfect hierarchy. For by the first, we know that *animal* is the proximate genus of man; and that, in the constitution of human nature, the generic nature which is determined by rationality is the (*potentially* rational) sensitive nature. By the second, we know that every essential perfection, constitutive of any infra-human nature (whatever or how many they may be), is actually present in human nature, by reason of the virtual inclusion in man's substantial form of every inferior substantial form. Hence, whatever order obtains among actually existing corporeal substances according to their specific and generic distinctions, can also be found in the structure of human nature itself. And, by the third proposition, we know that that order is finite: that it not only involves a lowest specific nature, having the least degree of perfection, but also a highest, having the greatest degree of perfection possible in the world of corporeal things.[63]

I shall not here repeat in full the indirect argument, based on these three truths, which is carefully and explicitly presented in *The Problem of Species*.[64] Instead I shall recast its main points, by showing that the facts of human nature make undeniable the first theory's account of the character of the common genus and its mode of differentiation. Let us begin by supposing a state of affairs contrary to the principle of perfect hierarchy, namely, that two species differ within a common genus by two positive determinations each rooted in a distinct perfection. Now there are two possibilities concerning the relation of these perfections: either they are contrary

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[62a] The first of these propositions, being the definition of man, needs no textual support for Thomists. The second of these propositions is one of the main lessons of QQ. 75 and 76 in the Treatise on Man (*Summa Theologica*, I). The third of these propositions is the explicit teaching of Ch. 22 in the *Summa Contra Gentiles*, III: ". . . Again, the vegetative soul is in potentiality to the sensitive, and the sensitive to the intellective. After this no later or more noble form is to be found in things subject to generation and corruption. Therefore, the last end of generation is the human soul, and to this does matter end as its ultimate form. . . . Therefore, man is the end of all generation." Cf. *ibid.*, IV, 97; and *Summa Theologica*, I, 66, 2. Vd. *Problems for Thomists*, pp. 270-274; THE THOMIST, II, 290-94.

[63] The order is finite in one other sense: it is not only limited by an absolute upper and lower extreme; but it must also have a finite number of steps between the extremes, because essences are integral. There are no fractional degrees, no intermediate forms, between natures which are specifically distinct, and which are proximate by reason of the fact that their differences (positive and negative) are rooted in one and the same essential perfection.

[64] Vd. pp. 176-180; THE THOMIST, II, 116-20.

to one another, so that the possession of one necessitates the rejection of the other, or they are cumulatively ordered, so that the possession of one involves the possession of the other, but not conversely. If the second alternative be the case, then the term which is constituted by posssession of the higher (the inclusive) perfection may be a species, but the term which is constituted by possession of the lower (the included) perfection *cannot be a species, but must be a genus*. This is the way in which the terms *man* and *animal* are related, or the term *animal* and *living body* (vd. Diagram 1); and, in the latter case, both terms are genera, neither is a species. If, however, the terms *man* and *brute* be compared, it will be seen that *brute* is constituted not only generically by the possession of a lower or included perfection (sensitive), but also *specifically* by the rejection of a higher or including perfection (*rational*). Hence, if two distinct perfections are cumulatively ordered, then both cannot be roots of specific determinations, for, as we have just seen, the higher of these perfections is the root of a positive, and specific, difference in one of the terms being compared (e. g., *man*), and the lower must be the root of a positive, but generic, determination in the other term (e. g., *brute*): it cannot be the root of a specific determination, (except in the proximately lower species, *plant*, and then through a negative difference). Hence, if anyone compares two terms as species, and wishes to regard the specific determination of each as rooted in a distinct perfection, he must choose the other "possible" alternative, namely, that these perfections are not cumulatively ordered, but related as contraries, in such wise that each of the species possesses one of these perfections and rejects the other. *But this other alternative is impossible*, because then human nature (even if *man* is not one of the two terms being compared as species) would have to possess contrary perfections, by reason of the fact that it virtually contains all inferior natures. The possession of contrary perfections violates the principle of contradiction.[65] Now, the principle of perfect hierarchy is identical with a *third* alternative, namely, that two species differ within a common genus by positive and negative determinations, both rooted in the same perfection. Since the three alternatives considered are exhaustive, the impossibility of the first two is equivalent to the necessity of the third. And this constitutes the indirect proof (in the light of

[65] This cannot be avoided by saying that matter can be in potentiality to contraries without violating the principle of contradiction. One cannot pass from that to saying that human nature can *virtually include* contraries; for the simple reason that *virtuality* is not the same as *potentiality*. If human nature virtually contained natures constituted by contrary perfections, it would actually possess these contrary perfections, *which is impossible.*

the facts about human nature) that the principle of perfect hierarchy is true.[65a]

This proof accomplishes two things. (1) It shows that no one can deny the principle of perfect hierarchy without also denying that man, as a rational animal, possesses the essential perfections of all other corporeal natures and is supreme in the corporeal order. (2) It shows that in so far as the second theory's account of genus and difference diverges from the first theory's account of these matters, the second theory of species is untenable, because incompatible with perfect hierarchy. Hence we can conclude that Thomists (defined by their adherence to the three aforestated truths about human nature) cannot hold the second theory of species: they cannot deny a perfect hierarchy of species; they cannot say that a common genus is determinable by two (or more) *positive* specific differences, each rooted in a *distinct* perfection.

Only one more thing remains to be done. There still remains one point of possible disagreement between the first and the second theory which leaves an issue to be resolved, namely, the question of the number of species. On no other point is disagreement between the two theories *possible for Thomists;* but it may still be thought that Thomists can disagree about the number of species. If now I can show that even on this point disagreement is impossible for Thomists, the issue is completely resolved, so far as it can be regarded as a problem for Thomists. If I can show that the first theory's account of the number of species must be accepted, I will have shown that the second theory, in every respect in which it might differ from the first, is absolutely untenable.

In proceeding with this last step of the demonstration, I now

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[65a] The three alternatives are: (1) two positive determinations, rooted in distinct perfections cumulatively ordered; (2) two positive determinations, rooted in distinct perfections related as contraries; (3) a positive and a negative determination, rooted in the same perfection. (That this is exhaustive will be seen by anyone who tries to conceive further alternatives; others can be stated, but analysis will show them to be completely inapplicable.) The third alternative belongs to the first theory of the common genus and of its mode of differentiation; and this in turn is the only theory of genus and difference compatible with the first theory of species which affirms a perfect hierarchy. Hence, the principle of perfect hierarchy is proved when this third alternative is necessitated by the impossibility of the other two; and the above proof consists in showing their impossibility. The first alternative is impossible because positive determinations, rooted in distinct perfections cumulatively ordered, cannot be determinations of terms within a proximate common genus; the second alternative is impossible because it violates the truth that human nature virtually includes all inferior natures and actually possesses all their essential perfections. The indirect proof given in *The Problem of Species* (loc. cit., fn. 64, *supra*) is a fuller explication of this last point, and should be consulted.

have two sets of premises which Thomists must affirm: one is the set of propositions about human nature; the other is the set of propositions which explicate the principle of perfect hierarchy. The proof to be given can be most effectively presented by focussing it upon three crucial terms: *animal, man, brute.* If it can be shown that *brute* must be *a species,* that *brute* cannot be *a genus,* it will have been shown that the number of species cannot be more than four, or at the most five; for if *brute* cannot be a genus, then certainly, and on the strongest of *a fortiori* grounds, *plant* cannot be a genus. The only question is whether body is *a genus* divided into two species, *element* and *mixture,* or whether *body* is itself *a species.* I say this is the only question, because even if *body* were a genus thus divided, *element* and *mixture* could not in turn be genera, for then there would be a larger number of species of inanimate than of animate substances, which is impossible on the basic Thomistic ground that higher forms are the principles of a great number of distinct operations, than lower forms.[66] Whence it follows that if *brute* is not a genus, there cannot be more than five terms in the hierarchy of species, properly conceived.[67]

Again the argument must proceed by a reduction to impossibility of the " possibilities " raised in objection to the point at issue. There are only two which can be offered. I take the weaker of the two first.

(1) Trying to argue that *brute* is a genus, the objector must offer something by way of specific distinction among brutes. To put his case in strongest terms, let us not suppose him to offer such things as *cow* and *ape* as species, but rather *mammal* and *non-mammal.* This does not preclude him from saying that *cow* and *ape* are species of *mammal,* if he is able to show that *mammal* and *non-mammal* constitute an essential distinction (albeit a generic one) within the higher genus *brute;* but if he is unable to show that *mammal* and *non-mammal* are essential divisions of *brute,* he is certainly precluded from regarding any further divisions of *mammal* as essential. Now, what are the differences by which *mammal* and *non-mammal* might be constituted as species? They must be *either* two positive differences rooted in distinct perfections: *or* they must be a positive and a negative difference rooted in the same perfection. Taking the first alternative, let us name the two positive differences as the *oviparous* and the *viviparous* modes of reproduction. Each

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[66] Vd. St. Thomas Aquinas, *In De Anima,* II, Lect. 1, 230. Cf. *Summa Theologica,* I, 77, 2. For a full explication of this point, vd. *The Problem of Species,* pp. 58-61, 71-72; The Thomist, I, 244-47; 257-58.

[67] I shall return later to the question of whether there are four or five.

is a positive determination of a generic power common to mammals and non-mammals, because they are brutes, animals, and ultimately, living things, having a vegetative nature. Each of these modes of reproductive operation is a distinct perfection possible in the sphere of animal life. But these distinct perfections are related as contraries, not cumulatively.[68] The brute animal which possessses the viviparous mode of reproduction rejects the oviparous mode, just as much as, conversely, the brute animal which possesses the oviparous mode rejects the viviparous. Hence, this manner of differentiating *mammal* and *non-mammal* violates the principle of perfect hierarchy; wherefore we know that this distinction cannot be an essential one, but must be accidental. We can conclude, therefore, that so far as the objector proposes distinctions of this sort, he cannot show *brute* to be a *proper* genus.[69]

Thus, the first type of " possibility " has been shown to be not at all possible, and by this first type I mean any effort to differentiate *brute* by positive differences, rooted in distinct and contrary per-

[68] Strictly speaking, the use of the word " non-mammal," to name one of the two kinds being distinguished, is incorrect, for the prefix " non- " should only be used to name a genus, as compared with a species which possesses a cumulative perfection, with respect to which the genus is indeterminate, e. g., the sensitive nature (the genus *animal*) is non-rational. Unfortunately, however, there is no word to name the oviparous nature, in contradistinction to the viviparous nature, which is mammalian. Nor does it make any difference to the essential point of the argument if the facts of biological classification do not support the distinction of mammals from non-mammals in terms of these two positive differences; for if they do not support this distinction, the facts then strengthen the argument against anyone who might try to argue that the distinction between mammal and non-mammal is essential rather than accidental.

[69] The force of this argument can be shown in a number of other ways. (1) Because they signify contrary perfections, *viviparous* and *oviparous* as the roots, respectively, of two positive differences, cannot differentiate the brute genus into species which are ordered as higher and lower in grade of perfection. (2) Because they are contrary perfections, rather than cumulative, human nature could not include both, virtually or actually; hence either human nature does not include all the essential perfections of inferior natures, or *viviparous* and *oviparous* do not signify essential perfections, and hence cannot be the roots of *proper* specific differentiation within the genus *brute*. (3) We know as a fact that man is a mammal: the human mode of reproduction is viviparous. Now if *viviparous* signifies an essential perfection, and one less generic than that signified by *sensitive*, the proximate genus of *man* is not *animal* (the sensitive nature), but *mammal*. In which case, a truer definition of man would be to say that he is a *rational mammal*, not a *rational animal*. But if it is absolutely true to say that man is a rational animal, then *viviparous* must signify an accidental perfection (and thus there would be nothing repugnant in the fact that human nature included some of the accidental perfections to be found among the *races* of *brute*, and rejected their contraries). But if *viviparous* must signify an accidental perfection, then *mammal* cannot be a *species* of *brute*, but only a *race*: which was to be proved.

fections. But those who wish still to insist that *brute* is a *genus* may now have recourse to a second type of " possibility." As distinguished from " possibilities " of the first type, what is now offered is the " possibility " that *brute* is differentiated by cumulative rather than contrary perfections. On the face of it, such a " possibility " would appear to be compatible with perfect hierarchy, for cumulative perfections can be essential, as contrary ones cannot. Furthermore, in this case, the species of *brute* to be distinguished will be differentiated by a positive and a negative difference, rooted in the same perfection, not in two positive differences, rooted in distinct perfections. Let us proceed to the argument.

(2) The objector might propose that *brute,* as a *genus,* can be essentially differentiated into *vertebrate* and *invertebrate.* Here *vertebrate,* like *rational,* signifies the positive difference, the possession of the perfection in question, whereas *invertebrate,* like *irrational,* signifies the negative difference, the rejection of that same perfection; and just as *animal* is *non-rational,* and thus determinable by both *rational* and *irrational,* so *brute,* as a genus in turn, is *non-vertebrate* and is thus determinable by both *vertebrate* and *invertebrate.* Again it is not important whether the objector maintain that *vertebrate brute* and *invertebrate brute* are infima species, or whether he merely hold that this is an essential, and generic, division, each term of which is capable of further essential differentiation: for in either case, if we can show that the suggested division of *brute* cannot itself be an essential one, it follows *a fortiori* that no subordinate divisions can be.[70]

To make the objector's case as strong as possible, I am going to shift to another distinction which, for Thomists, is the best of all the " possibilities " for an essential distinction within the genus *brute.* I am going to substitute *mobile* and *immobile* for *vertebrate* and *invertebrate.* All the formal properties, indicated above in the discussion of *vertebrate* and *invertebrate* as positive and negative differences rooted in one perfection, exist equally in the case of *mobile* and *immobile.* And I say this in a stronger case, because the distinction between *mobile* and *immobile* appears to be even more generic (some mobile brutes being vertebrate, some being invertebrate); hence it should be easier to make a case for a more generic essential distinction than for a less generic one. Furthermore, this

[70] It should be noted that the second type of " possibility " forces the objector to move to a higher level of the extensive hierarchy, set forth in Diagram 2; he has been forced to move to the left end of the axis of that hierarchy. It is a significant fact that this second type of " possibility " can be offered only in terms which are fairly proximate to *brute,* rather than in more remote terms.

distinction accords with the Thomistic divisions of sensitive life into two modes, related as perfect and imperfect, according to the possession or rejection of mobility (the locomotive power).[71]

The argument against the objection is as follows. The proximate genus which is divided by *mobile* and *immobile* (as positive and negative differences rooted in the same perfection) must either be *brute* or it must be *animal*. Taking the first alternative, we must say that the *mobile brute nature* is essentially more perfect than the *immobile*. But if mobility is an essential perfection in the hierarchy of species, then man must possess that perfection. We know in fact that he does. And furthermore, we know that in the hierarchy of cumulative perfections, *rational* is higher than *mobile*, for what is rational is mobile, but not conversely. Now, in forming a definition, the last positive difference is added to the positive differences which are rooted in lower perfections, and as such positively determine more generic natures. Hence, if all these things be so, we must define man as a *rational, mobile brute*. But this is impossible, for *brute* is itself defined as an *irrational animal* (thus constituted by a negative difference within the genus *animal*). We cannot say that man is a rational, mobile, irrational animal, and therefore we cannot regard *mobile* and *immobile* as essential differentiations of *brute* as a proximate genus.

We are forced, therefore, to take the second alternative, namely, that *mobile* and *immobile* essentially differentiate *animal* as a proximate genus. But, then, since *rational* signifies a higher perfection than *mobile, mobile animal* would be constituted as a genus, in turn differentiated, with respect to that higher perfection, by *rational* and *irrational* as positive and negative differences. Disastrous consequences result from this. The definition of man becomes *rational, mobile, animal,* not just *rational animal*. But then it is not the animal nature *as such* which is indeterminate with respect to rationality as a perfection, but only the mobile animal nature, for only that to which the last positive difference is proximately added is the genus indeterminate with respect to the perfection in which the last difference is rooted. And this same genus, because of this indeterminacy, is doubly determinable—not only by the positive difference but also by the negative difference which is rooted in the same perfection. Whence it follows that *mobile animal*

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[71] Vd. *Summa Theologica,* I, 78, 1. Cf. *Summa Contra Gentiles,* II, 95, where it is said that "one species has an additional grade of perfection over another, for instance, animals endowed with locomotion over those that are immovable." I might add that if *mobile* and *immobile* are species dividing *brute,* then that genus must be conceived as *non-mobile.*

as a genus is proximately divided into *rational* and *irrational mobile animal;* and it becomes impossible to explain the fact that some irrational animals are immobile. All of this can be summarized in two facts: (1) the *mobile* is divisible into the *rational* and the *irrational.* (2) The *irrational* is divisible into the *mobile* and the *immobile.*

Thus it is shown that *mobile* and *immobile* cannot be differentiae constituting an essential distinction. For either *mobile* is higher than *rational* in the ascending order of essential perfections, or *rational* is higher than *mobile;* but neither alternative is possible because, in the first, *man* must be defined as a *mobile, rational animal,* and *brute* as a *mobile, irrational animal,* which is impossible if there are, in fact, immobile, irrational animals; and, in the second, *man* must be defined as a *rational, mobile animal,* and *brute* as an *irrational, mobile animal,* which is impossible if there are, in fact, irrational, immobile animals. Or, to say the same thing one other way, there are only these two " possibilities ": that *animal* or that *brute* is the proximate genus essentially divided by mobile and immobile. But we have seen that neither is possible; wherefore we must conclude that *mobile* and *immobile* cannot constitute an essential distinction. *Mobile* must, therefore, like *oviparous* and *viviparous,* signify an accidental perfection, even though, unlike them, it appears to have no contrary opposite, but only a negative.[72]

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[72] The full force of this proof is contained, in *The Problem of Species,* in Objections 6 and 7 against the second theory as there expounded: Objection 6 showed that *brute* cannot be a genus if man is defined as a *rational animal*; Objection 7 showed that any differentiation by positive and contrary determinations cannot constitute an essential distinction, such determinations being rooted in accidental perfections. Vd. *op. cit.,* pp. 157-163; The Thomist, II, 99-104. These objections could not be answered except in an evasive manner. The arguments I have now stated are better by reason of the fact that no evasion remains possible any longer.

It is also worth pointing out that the foregoing argument has uncovered the sign which tells whether distinctions are accidental or essential. The fact that when *brute* is divided by *mobile* and *immobile* and also by *vertebrate* and *invertebrate,* these two distinctions cannot be ordered *in a single way*—this fact shows that the distinctions are accidental. (For if *brute* is first distinguished into *mobile* and *immobile,* each of these in turn can be divided into *verterbrate* and *invertebrate*; and if, on the contrary, the first division is into *vertebrate* and *invertebrate,* then each of these in turn can be distinguished into *mobile* and *immobile.* When terms are related in this way we know definitely that they cannot be involved in essential determinations of any genus. For essential determinations are always *well ordered* with respect to one another, accidental determinations are not. This is apparent in the argument: the fact that *mobile* could not be well-ordered with respect to *rational* showed that either or both were accidental perfections; but

The conclusion just reached completes the argument against the second theory. Since no possible way can remain, in which it can be argued that *brute* is *a genus* (all the "possibilities" having been shown to be strictly impossible), the conclusion that brute is *a species* becomes inescapable. And, as I have already shown, if *brute* is *a species*, then the number of specific natures (in a perfect hierarchy with *man* supreme) is either four or five. With the exception of the dubious point about number (four or five), the order of natures, specific and generic, is that pictured in Diagram 1. [73]

Nor can this conclusion be avoided by one who says that the whole argument rests on the particular examples employed; and who goes on to say that, although the terms chosen do not signify essential determinations, *perhaps*, there are other terms—*terms we do not now know*, which could accomplish what is being sought, namely, the further specification of *brute* as a *genus*. The answer is simply that there can be no *perhaps* about it, if we do now know that man is a rational animal. Of course, if Thomists are willing to admit that they do not now know the nature of man (the definition and structure of that nature, and its place among all corporeal things), then they can also say that there may be essential determinations of *brute*, which we do not now know. But unless ignorance is frankly *asserted* in the one case, it certainly cannot even be *supposed* in the other.[73a]

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since we know that *rational* signifies an essential perfection, we must conclude that *mobile* signifies an accidental one.)

[73] On the question of number, the argument given in *The Problem of Species*, was sound, but not sufficiently determinate. Vd. the reply to Objection 2 against the first theory (pp. 181-188; THE THOMIST, II, 122-29), in which it was argued that there could not be *more than ten* species in a perfect hierarchy, because of the order of essential perfections possessed by man, as these are signified by the specifically distinct human powers, in their various conjunctions and separations. At that time, I favored the position that there could not be as many as ten (though ten seemed possible), because of St. Thomas's position on the number of souls, and especially his insistence on the point that the locomotive power does not signify a distinction in grades of soul, but only in modes of animal life, as perfect and imperfect. Vd. *Summa Theologica*, I, 78, 1; cf. *Problems for Thomists*, pp. 187 ff.; THE THOMIST, II, 128 ff. We now see that the Thomistic position with respect to three as the number of souls is thoroughly justified by the proof that *brute* is not a genus, and that there cannot be more than three species of living things. The use of the word "species" in the passage quoted from *Summa Contra Gentiles*, II, 95 (vd. fn. 71 *supra*), must, therefore, be treated as an ambiguity. I shall later discuss such ambiguity in the use of words like "species" and "genus."

[73a] The point here being made is extremely important. It has traditionally been supposed that there are essential perfections which we do not know, and hence that

Yet it is true that the arguments presented *seemed* to rest upon particular examples. In order to remove the last trace of doubt about them, I shall now formulate the reasoning with complete abstractness. Whenever a genus is essentially divided by a positive and negative difference rooted in the same essential perfection (as required by the principle of perfect hierarchy) its proximate members must either be two species or a genus and a species. Whenever the proximate dividing members are a genus and a species, the member determined by the positive difference must be the genus, and that determined by the negative difference must be the species. If this were not the case, the genus could not in turn be divided by differences rooted in a higher essential perfection. There is only one case in which the proximate dividing members of a genus are both species. That is the case of *animal*, the proximate genus of *man* and *brute*. In this case, as in every other, the member determined by the negative difference (*irrational*) must be a species. This case diverges from every other *only* in the fact that the member determined by the positive difference (*rational*) is also a species, rather than a genus. This we know to be true from our knowledge of the facts of human nature, and from our knowledge of those facts, we also know that every essential human perfection, hierarchically inferior to that signified by *rational*, enters the conception and definition of *man* as a species, by way of the generic constituents, ordered as proximate or remote in various degrees according to the grade of the perfection by which they are positively determined. All of this is necessitated by the very principles which define a perfect hierarchy, as that is constructed in Diagram 1. Hence, on purely formal grounds it is proved that *brute* must be a

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we are justified in employing accidental perfections in the differentiation of species, i. e., by using properties or even contingent accidents as signs of substantial differences *even when we do not know what these substantial differences might be.* But this supposition is absolutely invalid on the ground that human nature virtually includes all inferior natures and actually possesses the essential perfections of all inferior things, *eminenter.* Since we claim to know the structure of human nature *adequately*, we cannot consistently say that there are inferior species whose substantial differences are rooted in essential perfections *not known* to us. Hence we are entitled to employ proper or contingent accidents as signs of substantial differences only with regard to those which are rooted in *known* essential perfections—known through our knowledge of man. *In fact there are no others.* This point explains why the second theory of species cannot be defended on epistemological grounds (in terms of our *supposed* ignorance of essential perfections by which many species of *brute,* let us say, are differentiated). The epistemological excuses given by defenders of the second theory are untenable in the light of the three truths about human nature. The issue in the philosophy of nature cannot be thus evaded. Vd. *The Problem of Species,* Ch. III; The Thomist, I, 112-20. Cf. fn. 87, *infra.*

species, and cannot be a *genus*. And the whole proof rests, first, on the truth of the principle of perfect hierarchy, and, ultimately, on the fact that that truth cannot be denied without denying the facts of human nature.[74]

13. *Proof of the first theory.* The disproof of the second theory does, in a way, constitute a sufficient proof of the first theory, for it has now been shown that no point, in which anyone might disagree with the first theory, is tenable. No tenable second theory remains, therefore. But there may still be difficulties intrinsic to the first theory, difficulties which remain even after any alternative theory is completely discountenanced. If this be the case, then the issue has been resolved, but the problem of species has not been fully solved. If this be the case, furthermore, we cannot say that our answers to questions about the order and number of species (or specific natures) have the demonstrative certitude which is the ideal of philosophical work. Hence, in order to show that the problem is solved and that our answers are certain, we must complete the demonstration by showing that no essential difficulties remain in the first theory, considered by itself. I shall proceed to do this by considering all of the objections to the first theory with which I am acquainted. I cannot, of course, say that these are the only ones possible. I can only say that these are all I know. To that extent, any proof must fall short of absolute certitude. I shall take up the several objections in the order in which they have become known to me.

(1) In writing *The Problem of Species* I myself framed two objections against the first theory—objections which did not arise from the opposite second theory, but from difficulties I perceived in the first theory, according to its own principles. These were objections 6 and 7.[75] The sixth objection said that it seemed to be impossible to formulate the essential distinction between *element* and *mixture* as the species proximately dividing the genus (*non-living*) *body*. The seventh objection said that if each specific nature were *as such* the generic constituent in the nature of its proximate superior, then the lowest nature in the hierarchy could not be conceived as having a genus at all. This objection would hold,

[74] This argument can be summarized in a single hypothetical syllogism: If *man* is the highest species, and if *animal* is *man's* proximate genus, then *brute*, the other member dividing that genus, cannot be a genus, and must be a species. The syllogism is resolved by the categorical affirmations that *man* is the highest species, and that man's proximate genus is *animal*.

[75] Vd. *op. cit.*, pp. 202-206; The Thomist, II, 143-47.

however that lowest nature were conceived—as *element* or simply as *body*. At the time, I found it impossible to answer either of these objections satisfactorily. Therefore, in concluding the book, I wrote that neither the first theory nor the second theory had been proved, because each had unanswered objections against them. The issue was not resolved, nor the problem solved, and it would not be until one or the other theory freed itself from such objections. If they were *unanswerable*, we had a perennial problem on our hands—and a *problem* (not a *mystery*) is the one thing which should not be perennial in *philosophia perennis*.

I now know that these two objections can be answered satisfactorily. I take the seventh objection first, because the other one is not really a serious difficulty. The difficulty in the first theory, pointed out by the seventh objection, beset it entirely because of my own error in formulating that theory. That error—the denial of a common genus—has now been rectified. With a true account of the common genus, and of its differentiation by positive and negative determinations, the first theory no longer has any difficulty with regard to the genus of the lowest species; for if that species be conceived as *body*, its genus is the corporeal nature conceived as indeterminate in two ways with respect to one perfection, i. e., the perfection signified by *vegetative life*: as determined positively (the possession of that perfection) a superior nature is conceived (i. e., the proximately higher genus, *living body*); as determined negatively (the rejection of that perfection), the lowest nature in the hierarchy is conceived (i. e., that which is signified simply by *body*). All of this is shown in Diagram 1. The solution of this difficulty would be the same if the lowest nature were conceived as *element*, rather than as *body*.

So far as the other objection (the sixth) is concerned, I would now answer it by saying that our lack of knowledge of any essential distinction between *element* and *mixture*—i. e., any distinction which would be compatible with the principle of perfect hierarchy—is sufficient evidence of the fact that no such distinction exists; and that the species *body* is accidentally divided by whatever *element* and *mixture* signify, just as the species *brute* is accidentally divided by what *mobile* and *immobile*, or *vertebrate* and *invertebrate*, signify. The various elements and mixtures are simply racial (i. e., accidental) types of body; and this remains the case however they are ordered *inter se*, for a set of accidental types may be ordered hierarchically among themselves. Hence the fact of the

apparently hierarchical disposition of the *so-called* elements, according to the atomic table, does not affect this argument.[76] I realize that this answer to the objection is relatively weak; but the objection itself is weak, for it makes no fundamental difference to the principle of perfect hierarchy whether there be four or five species. Though I shall henceforth speak of four, rather than five, species, I will remain aware of the uncertainty about this one point—uncertainty arising from the manifest contingency that progress in the experimental physical sciences, accompanied by a deeper understanding of their findings in terms of hylomorphic principles, will some day teach us the essential distinction between *element* and *mixture* within the genus *body*.[77]

(2) I turn next to the objections which I have derived from criticisms of *The Problem of Species* as published. So far as the critical discussion was at all pertinent, it raised only one objection to the first theory as expounded in the book, namely, that the first theory could not be true if the denial of a common genus was a point essential to it.[78] The objection was entirely sound; and it would have been totally unanswerable, and totally destructive therefore, if the denial of a common genus had not been an error on my part—an error which I have now completely rectified, showing that the denial of a common genus was no essential part of the first theory.[79]

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[76] Even if the atomic elements, considered *inter se*, formed a perfect hierarchy, they would all be species in the same genus, and thus the total hierarchy of species, considering species of *mixture* and species of *plant* as generically higher, would be imperfect, because that total hierarchy would be subject to many generic interruptions.

[77] Cf. *Problems for Thomists*, pp. 232-238; THE THOMIST, II, 252-58. What is said in the text above applies equally to the traditional position which regards *element* and *mixture* as genera, for if they cannot be essentially differentiated as genera, neither can they be as species.

[78] In one form or another, this was the difficulty brought to my attention by Prof. Pegis and Father Smith. Vd. fn. 6 and 9 *supra*. I see now that this difficulty was also being pointed out by M. Maritain in his Preface; but I did not see it at the time I replied to his Preface, as that reply itself all too plainly reveals.

[79] May I say, in some extenuation of my error, that I was entirely right in regarding as quite essential to the first theory the denial of what I took to be the second theory's doctrine concerning the character of that common genus and its mode of differentiation. For a common genus which is determinable by two or more positive differences, rooted in distinct and contrary perfections, is absolutely incompatible with a perfect hierarchy; as I pointed out in the book many times, such determinations must be accidental, not essential, and so also the perfections in which they are rooted. Unfortunately, the book as written is everywhere filled with unqualified denials of a common genus, just because it is everywhere filled with affirmations of a perfect hierarchy. If anyone now reads the book, in the

(3) I turn finally to objections which have occurred since I discovered my error and thereby corrected my formulation of the first theory.[80] There are three of these, all of which seem to me to be answerable.

(a) The first difficulty is that all of our ordinary empiriological visualizations run counter to the supposition that there are only four species. All the available evidence points to real *discontinuities* among subordinate kinds of *brute* or *plant* or *body*. These discontinuities, it is claimed, are our intuitive warrant for *seeing* many more really distinct species in the corporeal order than the four named. The answer is twofold. In the first place, mere discontinuity by itself is not a sufficient criterion for specification. While it is true that proper species are necessarily discontinuous, because essences are integral, with no fractional degrees between them, the converse is not necessarily true at all, that is, it is not necessarily true, wherever we find discontinuities among kinds, that those kinds must be proper species, essentially distinguished. Thus, it is quite possible that the so-called elements enumerated in the atomic table be accidental types of *body*, even though they appear to form a well-ordered series of integral (discontinuous) kinds. As the classification of racial types according to accidental distinctions does

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light of this article, he must trouble himself to interpret the words " common genus " as signifying the sort of common genus which must be denied by any true analysis of species. He must also trouble himself to interpret my oft-repeated opposition between an " ontological " hierarchy and a " logical " hierarchy as signifying the radical difference between a *perfect* hierarchy (Diagram 1), on the one hand, and an *extensive* hierarchy (Diagram 2), on the other. When I spoke of a " logical " genus I meant the sort of accidental genus in an extensive hierarchy. I shall return to this last point again. *Cf.* fn. 93, *infra.*

[80] I promised the reader that I would say how M. Maritain reacted to the corrected first theory, and to the demonstrative implications which followed from the correction. I was able to present the substance of this article to M. Maritain at the end of our conversations in Chicago, though not in as finished or as explicitly stated form as here presented. At that time, Mr. Maritain raised only three further difficulties, which I shall now try to answer. It should be noted that these difficulties all concern the *number* of species, and not the *principle of perfect hierarchy*. To the latter, Mr. Maritain agreed, though neither of us saw at the time all of the implications of the principle. In venturing to report M. Maritain's *only remaining* difficulties with the first theory, I must ask the reader to be considerate of two facts: (1) M. Maritain has not read this article, and in so far as it is a more precise statement than I could make in conversation, his ultimate judgments may be altered by it; (2) M. Maritain, with or without reading this article, may after much more mature deliberation have come to judgments and may have discovered difficulties with which I am not acquainted. What is here written must, therefore, be read as of this time of writing. I sincerely hope that M. Maritain will himself publish an ample discussion of all the matters herein treated.

not find an imperfect hierarchical ordering of these types repugnant, so neither does it find a discontinuous ordering of them repugnant. And, in the second place, it is a very real question, raised in the light of the best scientific evidence, whether, in the sphere of living things, for example, the *apparent* discontinuities are not themselves entirely of accidental origin—i. e., due to the extinction of intermediate varieties, or to the operation of purely accidental causes preventing the generation of such intermediate types. In other words, the order of *brute* racial types or *plant* racial types may be like a spectrum, on the surface of which certain accidental interference effects have occurred, thus preventing us from seeing the underlying continuity, and causing us to suppose an essential discontinuity among the accidentally separated colors. This, it seems to me, suffices as an answer.[81]

(b) The second difficulty is that man does appear to have *some* of the perfections found among brute creatures: man is mobile, a vertebrate, a mammal, omnivorous, etc. Now if, according to the first theory, these perfections are involved in the accidental, not essential, determination, of either the animal, or of the brute, nature, some explanation must be given of the fact that human nature shares in the possession of these perfections. Before I try to give the explanation asked for, let me point out the significance of one aspect of the fact which generates the difficulty: that man has only *some* of these perfections, found among brute creatures, shows that these perfections must be accidental; for man has all the essential perfections to be found among inferior creatures; and that man could not have *all* the perfections of the sort named follows from the fact that accidental perfections are contrary to one another, and not cumulatively ordered.[82]

The explanation is as follows. The specific *brute* nature is determinate essentially, but not accidentally: it exists in many diverse racial forms, and these forms can be ordered (imperfectly) from lower to higher according as they accidentally realize the

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[81] For a similar answer to a similar objection, see Reply to Objection 5 against the first theory in *The Problems of Species,* pp 198-202; The Thomist, II, 193-43. For a fuller explication of the point being made in answer, vd. *ibid.*, pp. 246-271; The Thomist, II, 266-91; and especially consult the work therein cited as affording the best survey of all the evidences which can be drawn from the field of genetics: i. e., T. Dobzhansky, *Genetics and the Origin of Species,* New York, 1937.

[82] I suggest that *mobile* and *immobile, vertebrate* and *invertebrate,* only *appear* to be ordered in the way that *rational* and *irrational, sensitive* and *insensitive,* are. If what is signified by these accidental perfections is closely scrutinized, it will be found that *mobile* and *immobile* are contrary in the same way that *oviparous* and *viviparous* are.

sensitive nature more and more fully: so that among irrational animals, some are better able than others to achieve the *telos* of the sensitive life.[83] But man is a rational animal, and as such he is sensitive *eminenter*. It is both natural and fitting, therefore, for man, sharing the same generic sensitive nature with brutes, to possess those accidental perfections which are most favorable to sensitive life, rather than their less favorable contraries. If man had evolved from the higher races of brute by processes of *purely* natural generation, the point under consideration could be causally explained. How much more so, then, is that the case in the light of man's creation as a species, since every extrinsic sign of the divine plan of creation points to a perfect hierarchical ordering of all things, both essential and accidental.[84]

(c) The third difficulty is supposed to arise from the fact that matter is unintelligible in itself and a source of unintelligibility in whatever it helps to constitute. In the light of this fact, it is said that if *brute, plant* and *body* signified species, " the world of matter would not be as hidden from us as the true character of matter demands." [85] We *should not* be able to know, by essential definitions, any specific nature inferior to man. Man alone is excepted, because the rational nature exceeds the potentialities of matter by its intellectual powers. Now I may not understand this objection, but as I do understand it, it seems to me either to prove too much or to have no force at all.

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[83] Since further accidental determinations of a species must be on the part of the perfections of the nature signified, they must be with respect to the generic characteristics of each species inferior to man, since in each of these cases, the specific difference does not signify a perfection possessed, but one rejected. Hence, it is incorrect to regard such accidental perfections as *mobile, vertebrate, viviparous,* as belonging to the specifically brute nature; rather they belong to the generic sensitive, or animal, nature, and that is why *man* can share in their possession, for he shares the same genus with *brute.*

[84] We find the hierarchy of corporeal natures exhibited within the structure of human nature, not only with respect to essential perfections, but also with respect to accidental perfections. I suggest that we call those brute races higher, which most closely resemble man in the accidental perfections determining the generic sensitive nature. I suggest, furthermore, that we are able to discern more of a hierarchical ordering among brute races than among plant races, precisely because the accidental similitudes between *man* and *brute* are greater than between *man* and *plant* (the vegetative nature being a remote genus, the sensitive nature proximate). It is interesting to observe, in this connection, that metaphorical comparisons between man and brute races (the lion-like, the fox-like, the pig-like man) are much more frequent and pointed than those between man and the plant races.

[85] *The Problem of Species,* Preface, p. x. M. Maritain raised this point in his Preface, but he also thought it was worth repeating as a final objection to the truth of the first theory

For, on the one hand, it is admitted that we can define, by real definitions, the several generic natures which are inferior to and included in human nature. But these generic natures are entirely immersed in matter; they do not exceed its potentialities in any way. Not only can we define these genera, but it is admitted that we can know precisely how many there are.[86] Furthermore, the genus should be less knowable than the difference, for the genus is taken from the matter, and the difference from the form.

And, on the other hand, I say that the objection has no force because matter is a source of unintelligibility only in accidentally constituted natures, and not in essences. The individual nature is unintelligible to us because matter is a determinant of individuality; and, similarly, the various sub-specific racial natures are unintelligible (i. e., not definable by real definitions) because, like the individual nature, they are accidental, not essential, unities. Hence, on the supposition that *brute,* for example, is a genus and that there are many species of *brute,* I can understand why it might be said that the reason we cannot define these *supposed* species is that the unintelligibility of matter prevents us. The explanation is appropriate for the facts, but it may be equally appropriate on the contrary supposition, namely, that *brute* is a species; for then it would be equally true to say that we cannot define the *brute* races because they are accidental classes, and again the unintelligibility of matter is a cause. In short, the unintelligibility of matter is not a premise which can help us to determine what are and what are not specific natures; rather it is an explanation of the inadequacy in human knowledge of the corporeal world. If we could know, in fact, that there were more species than we could define, we could refer this inadequacy in *our* knowledge to the unintelligibility of matter; but if, as a matter of fact, there are no more species than we can define, then our knowledge is inadequate only with respect to racial and individual natures, and this inadequacy can also be explained by reference to the unintelligibility of matter. The unintelligibility of matter does not, *a priori,* indicate the precise limitations of human knowledge; it is only after we have discovered these limitations by making our best efforts to know, that we can refer, *a posteriori,* to

[86] M. Maritain admits that we can form real definitions of what he regards as generic natures, such as *brute, plant, body.* But the fact that we can form such real definitions does not, of itself, tell us whether these natures are properly generic or properly specific. Hence, if it has been shown that these natures are properly specific, it cannot be an argument, against such demonstration, that we have real definitions of these natures.

the unintelligibility of matter as an explanation of whatever limitations we have found.[87]

This objection may be presented in a second form. It may be said that the reason why we know the essence of man, and of no inferior species, is that man is *sui generis*—" that man is a world in himself, a world contradistinguished from the whole world of other animals, and even from the whole world of other corporeal substances." [88] I do not think this point can be sustained, for though man is on the boundary line between the corporeal and spiritual worlds, he is strictly in one order of creation, not the other. If man were truly and literally a world in himself, essentially contradistinguished from the whole corporeal world, it would be false to say, as St. Thomas does, that man is the end of generation in the corporeal order; it would even be false to regard *animal* as an univocal genus common to *man* and *brute*, for the word " animal " would then become strictly equivocal. I do not deny that man has a special character: he is not only specifically distinct from the proximately inferior species *brute*, but he differs from the whole corporeal creation in two other essential respects: he has a power

[87] I wish to stress one point involved in my answer to this objection. It is that we cannot *know that there are*, in fact, more species *than we can know* (i. e., know quidditatively, define by real definitions). I think I have demonstrated this point completely in my discussion of the several epistemological hypotheses concerning our knowledge of specific natures. I think I have shown that we cannot infer anything from our ignorance, and that the epistemological question (how many species can we define?) cannot be answered until the ontological question (how many species are there?) is first answered. Vd. *The Problem of Species*, Ch. III, esp. pp. 40-47; THE THOMIST, I, 112-20. If this be true, then M. Maritain's employment of matter's unintelligibility is based upon a supposition which he cannot make; and, furthermore, he cannot use matter's unintelligibility to support this supposition in the absence of independent and demonstrative evidence that there are many species which we cannot define. Such evidence would be a positive proof of the truth of the second theory, as against the first, and we have seen that it simply does not exist; more than that, it never will be found, if the principle of perfect hierarchy is true. *Cf.* fn. 73a *supra*.

Nor can it be said that we lack real definitions of species because the substantial form, which is the principle of the difference, cannot be *directly* known. That is true, of course, but it is equally true of the human and of inferior species. We never *abstract* a substantial form from matter, as we abstract accidental forms from the subjects in which they inhere. All of our knowledge of substantial forms (the soul, for example) or of substantial essences is *a posteriori*, i. e., by steps of reasoning from accidents, to properties to essence, as in the case of the human soul we know its essence by inference from its operations to its powers, and thence to its essence. (It is a paradoxical fact that substantial forms are not directly knowable *by us* precisely because they are intelligible forms; whereas because they are sensible, and lie on the surface of a substance, accidental forms are directly knowable by sense, and capable of immediate abstraction by intellect.)

[88] *The Problem of Species*, Preface, p. xi.

which totally exceeds the potentialities of matter; and his substantial form is naturally incorruptible *per se*. But these differences do not warrant us in saying that, as an object of definition, the human essence is peculiar. They do not warrant us in concluding that the only species we can define is *man;* and hence there can be no objection here to the tenability of the first theory.[89]

There is a third form which the objection can take, but in this form it presents no difficulty whatsoever for the first theory. On the contrary, what is now to be said is affirmed by the first theory as an essential part of its own doctrine. If, it is said, there is a hierarchy of species as grades of being, that hierarchy of unequal essences must also be a hierarchy of grades of intelligibility: from God down to the lowest species of substance, from the Creator who is perfectly intelligible to the least intelligible of His creatures. But the intelligibility of things can be regarded in two ways: either *secundum se* or *quoad nos*. All the natures above man are more intelligible in themselves, but less intelligible to him; but it is also true that all the natures below man are, not only less intelligible *per se* than human nature is, but also less intelligible to man than his own nature. To point out that in the degree to which they are inferior to man, the infra-human species must be less and less intelligible to him, does not constitute an objection to the first theory. It can be offered as one *only on the supposition* that this fact is incompatible with a point claimed by the first theory, namely, that we know all the corporeal species adequately, that is, by real definitions. Since every real definition is, as a mode of knowledge, formally the same, the equal adequacy with which, according to the

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[89] The fact that *rational*, which signifies man's difference, also signifies an immaterial perfection does, of course, have unique consequences. The races of *man* are few, in comparison with the races of *brute* or *plant*; and furthermore, these human races differ accidentally *inter se* in the same way that *brute* races do, namely, with respect to accidental determinations of the generic sensitive nature, which *man* and *brute* share. There cannot be any further universal determinations of man's specific difference, (i. e., his intellectual nature), though men do differ substantially as individuals. That is precisely why there cannot be a higher species than *man* in the corporeal hierarchy. The facts about man's uniqueness are the very facts which make human nature absolutely supreme in the corporeal world, which make its hierarchy finite, which make *man* its final term of generation. In short, these facts are perfectly harmonious with the truth of the first theory; they need not be interpreted in the way exponents of the second theory suppose: as explaining why there are no species of *man*, whereas there are species of *brute* and *plant* as genera. Exponents of the second theory try to say that *man* is a species, whereas *brute* is a genus, because man's difference is an immaterial perfection. The truth is rather that the immateriality of the perfection underlying man's specific difference makes *man* the absolutely highest species in the corporeal order. Cf. *The Problem of Species*, Preface, pp. x-xi.

first theory, we know all corporeal species is thought to be inconsistent with their gradation in intelligibility *quoad nos*.

It is necessary to show this supposition of inconsistency to be false. While it is true that all real definitions are equal as knowledge, it does not follow that we know everything we can thus define, with equal adequacy, *in the full sense of that word*. A real definition is the source of adequate knowledge of the substance defined only to the extent that we can see, through that definition, how the properties flow from the essence. We have adequate knowledge, *in the full sense*, only in the case of man; and we have it there because human nature as an object of human knowledge is unique—it is the only object of reflexive knowledge. We do not and cannot have such knowledge of brutes or plants or bodies. But we can understand the essence of *brute* more adequately than we can understand the essence of *plant*, and of both of these much more adequately than we can understand the essence of *body*, precisely because our reflexive understanding of human nature illuminates the proximately generic sensitive nature we share with the *brute* species more than it does the remotely generic vegetative nature we share with both *brute* and *plant* species. And that we understand the essence of *body* least adequately of all follows from the fact that the purely corporeal aspect of our human nature falls entirely outside the light of reflexive knowledge. In short, though we possess real definitions of all the species in the corporeal hierarchy, we understand the essences of the members of this hierarchy in degrees of adequacy which are directly proportionate to their proximity to *man*, whose essence we understand with the maximum adequacy to which human knowledge can attain. What is more proximate in nature to ourselves, we understand better, more intimately, more fully, because the intimacy and fullness of our self-knowledge casts a reflected light upon what is essentially more like ourselves. Thus, the truth that the hierarchy of corporeal essences, graded in being, must also be a hierarchy of grades of intelligibility is not incompatible with the fact that we know each of these essences by a real definition; for even the lowest essence is intelligible *per se*, and it, therefore, has some intelligibility *quoad nos*, however inadequate that may be.[90]

[90] Cf. *The Problem of Species*, pp. 231 ff.; The Thomist, II, 251 ff. Professor Charles DeKoninck illuminates the point under discussion by saying: "An intelligence constrained to time, and which contemplates the universe at its beginning, or whose vision is limited to the natural inferior forms, would be able to see or predict with certainty only the human form. . . . That spirit would *predict infallibly* vegetative and animal life, but it would not know determinately all the ways in which they could be realized" (*op. cit.*, pp. 273-74; The Thomist, II, 293-94).

Thus are answered all the objections to the first theory with which I have become acquainted. Until further difficulties, now unknown to me, are raised, I feel justified in concluding that the first theory is proved, and the problem solved. What seems to me the most extraordinary confirmation of the first theory's truth is that, from beginning to end, every one of its essential points flows from the same insight—that we can reach a demonstrative knowledge of the order of nature through our reflexive knowledge of man. However weak is our capacity for knowing because, being sensitive creatures, we are rational rather than intellectual, and even though we abstract ideas from sense, and reason discursively, we nevertheless share with the angels the reflexivity which is characteristic of intellect. Here is a note in the proper analogy between human and angelic knowing—the power which both human minds and separate intelligences have for knowing the essence of all that is beneath them, through knowing themselves.[91]

V. CONSEQUENCES OF THIS RESOLUTION

14. The fourth part of *The Problem of Species* considered the consequences of a tentative resolution in favor of the first theory. The fact that the resolution need no longer be regarded as tentative—that the first theory can be regarded as true rather than as merely *more* tenable—in no way alters the implications which can be drawn, so far as these concern, in general, the relation between philosophy and science, and, in particular, the philosophical interpretation of the findings of natural science relevant to taxonomy and evolution.[92] But one thing which has happened since the book was written does make a difference to the implications of the first theory's truth—namely, the correction of the error in the first theory as originally expounded. It is, strictly speaking, not the *same* theory which I then tentatively assumed to be true, and now think I have demonstrated. I wish, therefore, to indicate briefly how the consequences have been altered as a result of this correction. I shall limit myself to two considerations: first, the interpretation of apparently conflicting texts in Aristotle and St. Thomas; second, an examination of the clarified notion of hierarchy in its bearings on the distinction between natural philosophy and natural science.

(1) If there are only four proper species, then whenever Aristotle and St. Thomas call anything other than *man*, *brute*, *plant*, and

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[91] Vd. St. Thomas Aquinas, *Summa Theologica*, I, 56.
[92] Vd. *op. cit.*, pp. 238-74; The Thomist, II, 258-94

body, a "species," they must be using that word in a different (and improper) sense. It is not difficult to discover what that different sense must be, as Aristotle uses the word in his biological works, in which usage St. Thomas follows him, of course. The word " species " as used of natures or concepts which are not properly specific is strictly equivalent in significance to the word " race," as I have been using that word to name any subordinate determination of a proper species by the possession or rejection of accidental perfections. Other synonyms for " race " are: " sub-species," " accidental concretion," " accidental class." All of these words must be understood as signifying either a nature which is more determinate *per accidens* than a specific essence, or the truly universal concept by which such an accidental nature, reductively in the category of substance, is conceived. Thus, we can speak of racial, as well as specific, natures; and of racial, as well as specific, concepts. So far the correction of error in the first theory calls for no alteration in the way conflicting usages of the word " species " must be interpreted.[93]

But the situation is different if we consider the word " genus " ;

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[93] The most precise mode of speech, it seems to me, would be to call proper species " essential " and improper species " accidental "; and we would then also refer to essential genera and differences, as opposed to accidental genera and differences according as they were proper and improper. The reader must be particularly careful to understand precisely what is meant by such phrases as " accidental genus " or " accidental species," used in contrast to " essential genus " or " essential species." *By an accidental genus is not meant a genus in one of the 9 categories of accident; but rather an accidental term reductively in the category of substance.* In short, what is meant is an accidental genus (of substance) not a genus of accidents. If the phrase " accidental genus " is rightly understood, there should be no misunderstanding of the correlative phrases: " accidental difference " or " accidental property "—in contradistinction to essential difference and essential property. The pivotal points about which these sets of terms constellate are, of course, proper and improper species, for the one is truly an essence (a true species), and the other is truly an accidental concretion (a race or variety). For a fuller analysis of the signification of the accidental terms related to improper species (analogous to the four predicables which are associated with proper species as a fifth predicable), vd. Part VI, Section 19, *infra,* and esp. fn. 129 and 130. For the present, it is sufficient if the reader be advised that there are linguistic difficulties in extending and correcting the traditional discussion of the predicables; and unless he make an effort to understand my words precisely as I intend them, he will not understand the basic contribution of my whole analysis—the distinction between two hierarchies, essential and accidental, the hierarchy of species and the hierarchy of races. Cf. fn. 53 and 79, *supra.*

One other point: from the point of view of biological science, and science generally, it might have been better to use the word " variety " instead of " race " to name improper species in the category of substance; but, unfortunately, " variety " does not have an adjectival form, and so I have used " race " and " racial."

for the error consisted in denying that, ontologically speaking, there could be a common generic nature. Hence I wrongly suggested that when St. Thomas writes, for example, " although man is of the same *genus* as other animals, he is of a different *species* " (*Summa Theologica,* I, 75, 3, ad 1), the interpretation must be that he is saying *genus* only in a logical sense.[94] I now see that wherever any term can be called a genus properly, that term signifies a real generic nature, just as every proper specific concept signifies a real specific nature. But, of course, there remain many other passages in which St. Thomas treats as a genus that which is not properly so, according to the truth of the first theory; as, for example, when he speaks of *brute* as a genus, and regards such terms as *horse* and *lion* as specific.[95] The rule of interpretation here differs from the rule for interpreting the word " species " in one important respect: the word " genus " is sometimes used to name what is properly a species, as in the case of *brute,* and sometimes used to name a more general racial type in contrast to a less general one, as, for example, when *mammal* is said to be the genus of which *lion* and *elephant* are species.[96] In the latter usage, the words " genus " and " species " together are employed to distinguish generic races from specific races, or what might be called accidental genera from accidental species. To read the works of Aristotle and St. Thomas in the light of the first theory, it is necessary to keep the following verbal usages clear: (1) " species " to name a proper species; (2) " genus " to name a proper genus; (3) " genus " to name a proper species; (4) " genus " and " species " to name races distinguished *inter se* as more and less general classes, as less and more determinate accidental types. This last point becomes fully clear only in the light of the sharp contrast between the essential hierarchy (of proper genera and species) and the accidental hierarchy (of accidental genera and species, or generic and specific races). I turn, therefore, to a final formulation of the types of hierarchy.

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[94] Vd. *The Problem of Species,* pp. 224-28; and esp. fn. 201 and 203; THE THOMIST, II, 244-48.

[95] Vd. *Summa Theologica,* I, 50, 4, ad 1, and I, 75, 7, ad 2, in which it is said that just as all things having a sensitive nature are not of one species, so neither are all things having an intellectual nature. What is intended, obviously, is not that *animal* (the sensitive nature) is divided into two species, *man* and *brute,* but rather that *brute* is further essentially divided into many species. Cf. *Summa Contra Gentiles,* II, 85. The comparison fails because what is signified by the common intellectual nature of all spiritual substances is their *natural* genus, whereas what is signified by the common sensitive nature of *man* and *brute,* or even of all brutes, is their *essential* genius. Vd. Section 15, (2) *infra.*

[96] In other words, no texts are found in which what is properly a genus is called a " species," but texts can be found in which what is properly a species is called a " genus."

(2) The distinction between the two hierarchies represented in Diagrams 1 and 2 is itself readily grasped. As dispositions of terms (whether these be concepts or natures), they differ by reason of a difference in the principles which generate the orderings: for the order of proper species and genera proceeds from principles of essential determination, whereas the order of specific and generic races proceeds from principles of accidental determination. The most appropriate way to name the two hierarchies, therefore, is to speak of the former as an essential hierarchy (an order of essences), and to refer to the latter as an accidental hierarchy (an order of accidental classes). Neither the one nor the other should be regarded as an ontological or as a logical hierarchy *exclusively,* for each is an ordering of terms which can be interpreted, in the first intention, as signifying natures, and, in the second intention, as signifying concepts. In the domain of essences and in the sphere of accidental types, the modes of predication, *per essentiam* and *per accidens,* accord with the modes of being.[97]

But further insight can be gained by seeing the two hierarchies as, respectively, the work of intensive and extensive abstraction. Regarding them now from the point of view of logic, the accidental hierarchy consists of concepts extensively (or totally) abstracted from singulars, whereas the essential hierarchy consists of concepts intensively (or formally) abstracted from singulars already universalized *somewhat* by prior acts of total abstraction. That is why, in constructing the accidental hierarchy, we proceed from

[97] The most unfortunate consequence of my error in denying a common generic nature was the fact that I distinguished the types of hierarchy as "logical" and "ontological." This unhappy language runs all through *The Problem of Species.* I must ask any reader who may consult that book for detailed discussions of points referred to by this article, to be generous enough either to overlook that language, or to interpret it according to the correction now being made: the hierarchy I called "ontological" is now seen to be the perfect hierarchy of essences; viewed logically, that is the hierarchy of proper specific and generic concepts; the hierarchy I called "logical" is now seen to be the imperfect hierarchy of accidental classes; viewed ontologically that is the hierarchy of specific and generic racial natures. It should be obvious that the order of essences must be a perfect hierarchy, just as the order of accidental types must be *imperfect.* There is no longer any need, therefore, to employ the words "perfect" and "imperfect" when the two hierarchies are understood as *essential* and *accidental.* The imperfection of the accidental hierarchy is, of course, primarily in its vertical axis (in which, at different levels of generality, races are ordered as lower and higher grades of accidental being); but secondarily, there may also be imperfection in the horizontal axis (in which races may be more or less imperfectly differentiated from one another, in contrast to the perfection of essential differentiation). Vd. certain passages in *The Problem of Species* in which I spoke of the two hierarchies as essential and accidental; e. g., fn. 247, p. 249; THE THOMIST, II, 269.

universal wholes by division of them into their parts. This motion from the general to the particular corresponds to the order of learning *only when our ideas are total abstractions.*[98] In contrast, we proceed from more determinate to less determinate universals when we construct the essential hierarchy, for this is a product of intensive or formal abstraction, whereby we see the essential part in the essential whole: in this case, we must know what the species are before we can see their generic constituents in them.

The intellectual methods by which we come to understand the disposition of natures in these two hierarchies are radically diverse. The method of division, the procedure from whole to part as extensively abstracted, is proper only in the accidental order. The hierarchy thus generated is potentially infinite, precisely because it is accidental, on the part of nature, and the product of extensive abstraction, on the part of mind. The method of discrimination, the procedure from the whole to the part as intensively abstracted, is proper only in the essential order; and the hierarchy thus generated is necessarily finite because it is essential, on the part of nature, and the product of intensive abstraction, on the part of mind.[99]

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[98] Cf. *Summa Theologica,* I, 85, 3. (Note especially ad 2.)

[99] As we have already seen, the meanings of "genus," "difference" and "species" differ radically as these words are used in the two orders. In the accidental order of total abstractions, the genus is simply a more general concept (in extension and comprehension), the species a less general concept (in the same way), and the difference any accidental determinant by which the genus can be diminished in extension and increased in comprehension. In the essential order of formal abstractions, the difference is an essential determinant, with respect to which the species are conceived as determinate (positively and negatively), and the genus is conceived as in the differing species because indeterminate in this essential respect, though determinate in other essential respects which can be found in both species.

The only point of identity between the two hierarchies lies in the fact that, in both, generic terms are more extensive and less comprehensive than specific ones. But the two hierarchies should not, therefore, be *confused* or *run together* as if there were no distinction between them. It is highly unfortunate, therefore, that most logic text-books, following the tradition of teaching in the field of *minor* logic, treat terms which should be placed in an essential hierarchy, as the most general terms at the highest level of the accidental hierarchy. Viewing proper genera and species *as if they were extensive abstractions,* this treatment commits no *formal* error, for these concepts are, in extension and comprehension, the superiors of any concepts which rightly belong in the accidental order. But when *major* logic follows *minor* logic, not only in time, but in this mode of analysis, which is formally correct only in minor logic, and converts any concept which is superior, in extension and comprehension, into a genus, and its inferiors into species, the traditional logician fails to make a basic distinction between the two hierarchies. The confusion which results not only infects the rest of logic, but acts as an obstacle to the discovery of the truth about natures. I shall return to this point in Part VI, *infra.*

Now these two intellectual methods help us to define the basic formal distinction between science and philosophy. These two kinds of knowledge are formally the same, in so far as, studying *ens mobile,* all of their concepts are abstractions of the first grade. But they are also formally different in so far as, in studying this same formal object, natural science works entirely by extensive abstraction, employs only accidental definitions, and deals with substances only under the aspect of their accidental determinations; whereas the philosophy of nature works entirely by intensive abstraction, employs only essential definitions, and deals with substances under the aspect of their essential determinations. The cooperative unity of science and philosophy in the study of nature can be established because the two methods of investigation, when they have been properly distinguished, can be well-ordered to one another. The maxim *distinguer pour unir* can be fulfilled. The achievement of this precise distinction between natural science and natural philosophy is one of the most important consequences of our whole discussion.[100] It explains the double usage of such words as "genus" and "species"—appropriate, in a proper and essential sense, to philosophical analysis, and, in an improper and accidental sense, to scientific investigation. But most important of all, as I shall try to show in the next part, it explains how the erroneous theory of species originated, and why it persisted: it was due to lack of distinction between the scientific and the philosophical study of nature; it was, therefore, an error easily made in any epoch, such as the ancient or mediaeval, in which the cultural conditions for making a clear distinction between science and philosophy had not yet matured.

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[100] Cf. *The Problem of Species,* Ch. XI; THE THOMIST, II, 258. I call attention to the importance of this point because it is so generally supposed that the distinction between total and formal abstraction is a distinction just to be made prior to the analysis of the three grades of abstraction, and then forgotten. On the contrary, the distinction between total and formal abstraction occurs within the sphere defined by each grade of abstraction: on the first grade, it separates natural science from natural philosophy; on the second grade, it separates modern mathematics from Greek mathematics (for, as any reader of Russell's *Principles of Mathematics* knows, extensive abstraction is indispensable to the logic of modern mathematics); and on the third grade, it separates a metaphysics emptied of intuitive content from a metaphysics which *sees* being at the heart of concrete things. (Cf. Maritain, *Preface to Metaphysics,* Lecture II.) It is also worth observing that extensive abstraction is capable of giving us genuine knowledge of the real on the first grade, even though it be only of accidents, whereas, on the third grade, it gives us only an illusory metaphysics. And the problems of mathematical philosophy will never be solved until the relations of extensive and intensive abstraction, on the second grade, are fully understood.

15. Before I turn to the concluding part, there are two other minor points. I call them " minor " not because they are unimportant considerations in themselves, but because they are of minor relevance to this discussion. The first concerns the analogical predication of proper genera and species. The second concerns the interpretation of genus and difference, as constituting the species, in the light of a doctrine concerning matter and form as composing the essence—essence being that which is signified by species as the real object of definition.

(1) Words may be *used* equivocally, univocally, and analogically, but concepts *are* only of two kinds: they are *per se* either univocal or analogical concepts. *All* transcendental concepts, and *only* transcendental concepts, are purely analogical. Because they are analogical *per se,* they never function univocally, and in their analogical function, they occur primarily in judgments of proper proportionality. Though they may occur secondarily in judgments of attribution (for a properly proportional analogy may virtually contain analogical attributions), [101] they can never be employed metaphorically. That is the prerogative of univocal concepts. In contradistinction to those concepts which are called " transcendental " because, being predicable of necessary and contingent being (in every grade and mode), they transcend the categories (the ten predicaments), are the concepts we call " categoreal " because they are genera or species of substance and accident. Categoreal concepts have two fundamental properties: (a) they have a restricted range of predicability—not of all beings, but only of some; (b) they are primarily univocal.

But unlike transcendental concepts, which never function univocally, categoreal concepts, though their primary mode of functioning is univocal, can also function analogically. The cases in which they function in the metaphorical or attributive modes of analogy are so plain and simple as not to need any analysis here. The only troublesome problem is whether categoreal concepts can ever function analogically in the mode of proper proportionality. Is this mode of analogical judgment the exclusive prerogative of transcendental concepts? Regarding concepts in their primary character, the answer must be affirmative. And transcendental concepts have *only* a primary character; hence they function in only one way: analogically. But categoreal concepts have a secondary character, because they include transcendental as well as categoreal notes: thus, the concept of substance, or of any species of sub-

[101] Vd. Maritain, *Les Degrés du Savoir,* Appendix 2.

stance, must include the note of *being;* similarly, the concept of virtue must include the note of *goodness,* and the concept of knowledge must include the note of *truth.* Therefore, any categoreal concept, which is primarily univocal, can, by reason of implicit transcendental notes, be secondarily predicated in the analogical mode of proper proportionality. This analogical predication of a strictly univocal concept is sometimes spoken of as analogy of inequality, and sometimes it is described as analogy on the part of the things judged, but not on the part of the concept predicated.[102] But however it is called, the analysis remains the same: a univocal concept functions analogically (in a proportional manner) when it functions in judgments about entities which are not identical in grade of being; and it can function in this way only because it contains truly transcendental notes. Though in this case, the analogy is primarily on the part of the thing, because the concept is primarily univocal, it can be secondarily on the part of the concept, by reason of its implicit transcendental notes.

In the light of this analysis, we can say that every proper generic concept is primarily univocal, and secondarily analogical when it is predicated of species unequal in rank. So much is absolutely clear. But it also seems possible to say that even a proper specific concept, which is primarily univocal, may be secondarily analogical when it is predicated either of races, unequal in their accidental grade of being, or of individuals, in so far as each individual thing is, ultimately, also a uniquely graded being. And if this be true, then even racial concepts, whether generic or specific, can also be predicated analogically, though they, like proper genera and species, are primarily univocal.[103]

(2) The problem of the composition of corporeal essences requires separate treatment. When I said in *The Problem of Species* that I found difficulties in the traditional doctrine of common matter as a component of the essence, I did not mean to imply that the matter was in no sence involved in the object of our definitions. Even though I spoke of identifying the essence with the substantial form, I did not suppose that we could conceive the full nature of a corporeal substance in terms of the form alone. To explain the points I had

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[102] Vd. St. Thomas, *In I Sent.,* D. 19, q. 5, a. 2, ad 1. Cf. Cajetan, *De Nominum Analogia,* ed. by P. N. Zammit, O. P., Rome, 1934: Cap. 1. Vd. St. Thomas, *Summa Theologica,* I-II, 66, 1, ad 1. Cf. also a doctoral dissertation "Analogy, A study in Thomistic metaphysics," done at the Institute of Mediaeval Studies in Toronto (May, 1940), by James F. Anderson.

[103] Cf. what is said on this problem of analogy in *The Problem of Species,* pp. 242-244; and also fn. 64, 84, 139b, 163a, and 203; The Thomist, II, 262-64.

in mind would require an elaborate discussion of types of definition, and their diverse objects, as well as a precise analysis of the notion of matter as prime, as signate, as common, in relation to the distinction between the specific non-subsistent essence and the individual essence terminated by subsistence.[104] Since the points in issue were not determinative, one way or the other, of the solution of the problem of species,[105] I decided to postpone that discussion for a later work. But it is, nevertheless, possible here and now to anticipate that later work by expressing the relationship of genus, difference, and species in terms of matter and form. The correction of the unfortunate denial of a common genus facilitates a metaphysical rendering of the first theory.[106]

The logical intention, genus, is said to be taken from the matter; the logical intention, difference, from the form; the genus is said to signify the whole potentially, from the point of view of the matter as determinable; the difference is said to signify the whole potentially, from the point of view of the form as determinative; and the species, which is taken from the union of matter and form, signifies the whole actually.[107] Now the generic nature of any substance is also to be understood in terms of the substantial forms which are virtually included by the substantial form which is a given substance's first act; and the proximate generic nature is the highest of these virtually included forms. Hence we know that the matter which is common to the essence of two species, and which is the principle of the common genus, must be matter virtually formed. But the genus is indeterminate in respects in which the species, having that common genus proximately, are determinate; and this indeterminacy leaves the genus determinable in two ways: by a difference which consists in the possession of an essential perfection, with respect to which the genus is indeterminate, and by a difference which consists in the rejection of that same perfection. Hence, we know that the positive difference signifies the inclusion of the virtual form in a substantial form of higher rank; whereas the negative difference signifies the actual presence in prime matter of the same sub-

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[104] Vd. *The Problem of Species,* pp. 14-17, 20-21; The Thomist, I, 92-95; 98-101. Cf. Maritain, *Degrés du Savoir,* Appendix 4; and L. de Raeymaeker, *Metaphysica Generalis* (Louvain, 1935): I, p. 217.

[105] Vd. *The Problem of Species,* pp. 168-176; The Thomist, II, 108-117.

[106] As already pointed out (vd. fn. 55 *supra*), such metaphysical rendering is necessary because our logical account of genus and difference has employed privative and negative terms; although these terms signify nothing in the real, there must be aspects of the real which support the truth of a logical analysis using such terms.

[107] Vd. St. Thomas, *De Ente et Essentia,* Ch. II.

stantial form which was virtual in the common matter. Thus we see how the common matter is potentially the whole of a lower and higher species, becoming actually that whole when the virtual substantial form, by which common matter has some determination, is the actual form of the lower species, or is included in the higher substantial form of the species of higher rank. And this explains how common matter differs from prime matter: in that prime matter is, by the remotion of all forms, absolutely indeterminate and indefinitely determinable; whereas common matter must be determinate to some extent (otherwise it could not be the principle of *this* genus rather than *that*), and being determinate to some extent, it is definitely determinable only by those differences which constitute the two species, both of which the genus is potentially. Common matter has these characteristics because, unlike prime matter, it is not conceived by the remotion of all forms, but as virtually formed to receive or reject a certain grade of essential perfection. Both the reception and the rejection are actualizations of this potentiality, but not in the same way: in both cases, the matter is actualized by a substantial form, but in the one case, that substantial form is the one proximately above the virtual form of the common matter, and in the other case, it is that common matter's virtual form itself become actual.[108]

Finally, in the light of the foregoing, we can understand the Thomistic distinction between what is called the "natural" and the

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[108] Cf. *The Problem of Species,* p. 179; THE THOMIST, II, 120, wherein I vaguely anticipated this analysis. This analysis explains the real conditions signified by *privation* in the genus, as well as by the *negative* difference which constitutes a species by the rejection of a perfection. For, metaphysically speaking, what is signified by the negative difference is simply the form, virtual in the common matter, become actual as the first act of an existing substance; and what is signified by the indeterminacy (privation of determination) in the genus is the mere virtuality of that form, capable of either being *included* in a form of higher rank as the first act of an existing substance (higher species) or of being *itself* the first act of an existing substance (lower species). And, of course, the genus never signifies any actually existing nature; it always signifies a potential nature; and so the common matter (matter conceived as under a virtual form) exists only in the specific essence, where the same matter is under an actual form, the principle of the difference. Hence when St. Thomas says that "specific difference is derived from difference of form; nor does every difference of form necessarily imply a diversity of *genus*" (*Summa Theologica,* I, 75, 3, ad 1), the statement can be interpreted to mean that, as between two existing substances, proximately differing as to specific nature, *there is only a difference in their substantial forms.* That such substances do not differ in genus follows from the fact that the potential whole of their diverse essences can be conceived in terms of the same common matter, i. e., matter under the same virtual form.

"logical" genus.[109] The natural genus of a substance is to be understood in terms of its ultimate metaphysical composition: either as a composition of form and existence (angels) or as a composition of prime matter and substantial form (corporeal things).[110] In contrast, the logical genus of two specifically differing substances, *belonging to the same natural genus,* is the intention taken from the common matter in their essences; whereas the logical genus of two substances, *belonging to different natural genera*, is a purely logical intention, *purely logical* in the sense that it can have no first intentional significance whatsoever, for it can signify no common matter, as the principle of a generic nature capable of specific differentiation. Hence St. Thomas calls this latter genus "logical" to distinguish it from all other generic concepts, which can be both first and second intentions. Strictly speaking (since the celestial bodies do not differ in matter from sub-lunary bodies), there is only one "logical genus" (of the type described) in the category of substance—and that is *substance* itself. But within the natural genus of corporeal, as distinguished from the natural genus of spiritual, substances, it still remains important to discriminate between the *natural* genus, which is taken from the prime matter and, as such, is common to all the corporeal species, and the *essential* genus, the one mentioned in a definition, which is taken from the common matter and, as such, is common *proximately* only to two species (or to a genus of higher rank and a species).[111]

VI. CONCLUSION: AN HISTORICAL HYPOTHESIS

16. This concluding part is written for those readers who have found, in the foregoing analysis and arguments, the demonstration

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[109] Vd. *Summa Theologica,* I, 88, 2, ad 4, wherein St. Thomas says that spiritual and corporeal substances are in the same genus, *substance,* logically, but not naturally; and *ibid.*, I, 66, 2 ad 2, wherein St. Thomas says that earthly and celestial bodies are in the same genus, *body,* logically, but not naturally. Cf. *De Trin. Boetii,* IV, 2, where the same points are made even more explicitly: to the effect that things are said to be in different *natural* genera, according to three conditions: (1) because no matter at all enters into their natures, i. e., the angels; (2) because the matter which enters their natures is incorruptible, i. e., the celestial bodies; (3) because the matter which enters their natures is corruptible, i. e., the sublunary bodies. Now, if we omit the second case, as the metaphysical analysis of a matter contrary to fact, there remains only one distinction as to natural genus: between substances having no matter, and substances composite of prime matter and substantial form.

[110] Vd. fn. 109 *supra.*

[111] Cf. *The Problem of Species,* pp. 172-173; THE THOMIST, II, 114-15. The points just made have a bearing on the analysis, which I propose to do later, dealing with the types of definition in relation to the notions of matter and form as composing essences and substances.

of a truth and the exposé of a false doctrine. For they, as I, must wonder how it could have happened, how such mistaken views, in both logic and the philosophy of nature, could have arisen and have persisted for so long. For them I should like to propose an explanation—an historical *hypothesis* which locates the crucial mistakes in the work of Aristotle. This being their origin, it is not difficult to account for their persistence in the tradition of European philosophy.

But first it is necessary to define precisely the character of the mistake being accounted for. It does not consist, as might be supposed, in affirming the second theory of species as contradicting the first on all important points. In fact, the second theory has probably never been held by anyone in so extreme a form. The mistake must rather be described as a failure to see the whole truth which is contained in two related analyses—on the one hand, the analysis of *proper* species and genera as disposed in a perfect hierarchy (Diagram 1); and, on the other hand, the analysis of accidental classes (*improperly* regarded as species and genera) as these are disposed in an extensive hierarchy (Diagram 2). There is absolutely nothing incompatible between these two analyses. The two hierarchies of terms which they present can be perfectly ordered to one another, *but only on one condition,* namely, that the two analyses be kept distinct, that the two hierarchies be understood to be as basically different as essence and accident are. It is precisely this condition which history shows has been violated. When things which should be kept distinct are not rightly distinguished, confussion and disorder must result.

Such confusion and disorder permeate any view of species and genera which runs the two hierarchies together. This view is, in a sense, the second theory of species, not as opposing the first theory in every respect, but as trying to include some of the points of the first theory while at the same time trying to hold on to contradictory elements in the divergent account. The confused view can be easily recognized in every one of its historical occurrences, for it bears a telltale mark. The sign is a double affirmation which cannot be made consistently: (1) that *man* is a rational animal, and (2) that *brute* is a genus. The mistaken view is thus seen to be the second theory, as including the first in so far as the real definition of man is affirmed and real definitions of such " genera " as *brute* and *plant* are admitted, but also as diverging from the first in falsely regarding *brute* and *plant* as genera, and hence holding to a larger number of species. Such a view must necessarily fail to see the distinction between the two hierarchies and must necessarily confuse two quite distinct analyses: of proper species and genera, on

the one hand, and of races (improper species and genera), on the other.[112]

My historical hypothesis is that the mistaken view had its origin in a fundamental error and inadequacy in Aristotle's logical treatises (especially in the *Posterior Analytics* and the *Topics*). That error and inadequacy has persisted throughout the whole history of Aristotelian (which means "scholastic") logic. But, unfortunately, because of the way Aristotle's logical writings dominated mediaeval thought, and exercised an undue influence over speculations about the nature of things, the error spread to and infected what we *now* call the philosophy of nature.[113] Hence, there are two steps in my historical explanation. In the first, I shall try to account for the origin of the error in logic, at the time of Aristotle. In the second, I shall try to account for the spread of this error, in post-Aristotelian thought, to the domain of knowledge about the corporeal world.

There is one other preliminary observation I should like to make at once, in order to prevent misunderstanding and emotional unpleasantness. I realize that the name of Aristotle is sacrosanct, and deservedly so, in grateful tribute to an incomparable, original mind. But Aristotle was human, and his humanity places two limitations upon his work: (1) it is always the product of a *finite* mind (not

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[112] In *The Problem of Species,* I referred to this view as the second theory of species, because I then thought there were two *possible* theories in opposition. Now that the truth of the first theory has been demonstrated, there is no possible second theory. I shall henceforth refer, therefore, to the *mistaken* view (i. e., the view which confuses analyses that should be kept distinct and which, because of this confusion, fails to give an orderly and adequate account of the whole truth.)

As I read traditional and contemporary texts, I cannot help feeling that the mistaken view was and still is widely prevalent. I have presented the evidence for this feeling in *The Problem of Species*: vd. Ch. V and X; The Thomist, I, 381; II, 237. Others may be able to interpret the texts differently, but I seriously doubt whether they can show that the true and adequate theory (not only *true* with respect to proper species and genera, but *adequate* in the sense that it orders the accidental to the essential hierarchy in terms of a clear distinction) is the dominant view in *philosophia perennis*. I would go further and say that I doubt whether the true and adequate theory could have been completely formulated until the modern period. The mistaken view, as I shall now try to show, is an historical phenomenon, thoroughly explicable and condonable in the light of the historic cultural conditions of ancient and mediaeval thought. If that is the case, then the true and adequate theory can be completely Aristotelian and Thomistic even if, as a matter of historic fact, it was never completely known to Aristotle or St. Thomas.

[113] I say "we *now* call" because until modern times there was no distinction within the sphere of *physics* (defined by the first grade abstraction) between the *science* and *philosophy* of nature. This very fact is basic to my explanation of the error, its origin and persistence.

only finite, but also of the lowest order of created intelligences); (2) it is always the product of an historically located mind—a mind bounded in its outlook by definite cultural conditions. It is not sufficient to admit that, like Homer, Aristotle also sometimes nods. That concession is too often made only with respect to unimportant inaccuracies about matters of observable fact. A just recognition of the inescapable limitations which humanity imposes on Aristotle's, or any other man's, work requires us to admit that Aristotle might have erred on major points of philosophical doctrine.

Now, it is no longer unheard of to say that Aristotle, the author of the *Metaphysics* and really the founder of that study, is far from perfect as a metaphysician.[114] Lacking, and in a sense even opposing, a doctrine of creation, Aristotle could not know the basic distinction between necessary and contingent being in terms of essence and existence as identical in God and really distinct in creatures. As a result, his understanding of the analogy of being was crucially defective. His *supposed* proofs for the existence of God were nullified by his *supposed* proofs for the eternity of the world. His theory of matter was sufficiently imprecise to permit some of his followers to commit the error about a plurality of substantial forms; and his account of the human soul not only lacked a clear argument for its incorruptibility, but also, in the context of his doctrines about God and eternity, permitted commentators to discover in his writings warrant for false notions about the unity of the intellect, active or possible. Now, with respect to all of this, Thomists agree upon three things: first, that the points I have called errors and inadequacies are rightly so named; second, that St. Thomas, as an interpreter of Aristotle, avoided these errors and corrected these inadequacies; and third, that St. Thomas, unlike Avicenna, Averroes, and others, was able to do so because he approached these philosophical questions in the light of Christian faith. In this one fact lies the essential distinction between the capacity of the pagan Aristotle and his greatest Christian disciple. It is not that St. Thomas, as a mere man, had a greater intellect: on the merely human level, the greatness of the discoverer surpasses the greatness of the expositor. It is rather that St. Thomas was a Christian, and possessed through God's grace a light by which to see things that must always have remained in the dark for Aristotle, no matter how magnificent his natural aptitudes for learning the truth. In this one fact, I say, lies the essential superiority of Christian over Greek philosophy. And when we understand the sources of this

[114] Vd. E. Gilson, *The Spirit of Mediaeval Philosophy*, New York, 1936: Ch. I-V; and A. C. Pegis, *St. Thomas and the Greeks*, Milwaukee, 1939.

superiority, we can, without any condescension whatsoever, excuse Aristotle for faults which belong to him *as a Greek*—which follow from his human limitations as living in a certain way at a certain time, as a pagan in a pre-Christian era.[115]

The superiority of Christian philosophy is primarily in the sphere of metaphysics, and especially on the boundary line between natural and sacred theology. There is no reason for a similar superiority of Christian thought in the spheres of physics and logic. We know, in fact, that such superiority does not exist. I do not mean that Christian commentators fail to improve upon Aristotle in these fields; but the improvements are entirely in matters of systematic detail, in making latent implications explicit. I mean that, in the fields of physics and logic, Christian commentators fail to do what they do in metaphysics. They fail to rectify the basic errors and correct the essential inadequacies in Aristotelian logic and physics. And the reason for this failure is like the reason for the superiority of Christian thought in metaphysics. Just as in the latter case, an historic fact of profound cultural significance—the fact of Christian revelation—explains the superiority, so in the former case, another historic fact, also of great cultural significance, explains the failure. As the occurrence of Christian revelation separates the mediaeval from the ancient world into two distinct cultures, in which human thought has different reaches, so the occurrence of scientific investigation as an autonomous and self-conscious enterprise separates the modern world from both ancient and mediaeval eras taken together, as a world in which altered cultural conditions make possible new attainments of thought. And just as the characteristic superiority of Christian, or mediaeval, philosophy was in the sphere of metaphysics because its problems were most illuminated by faith, so the characteristic superiority of modern philosophy can be in the sphere of logic and the philosophy of nature because their problems are most altered in perspective by the separation of science from philosophy.[116]

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[115] The notion of Christian philosophy, to which I here subscribe, has two points in it: first, that the light of faith was, in fact, historically indispensable for the discovery of certain truths which, as such, belong to the domain of natural reason, and hence are strictly philosophical, not theological; second, that the light of faith is not similarly indispensable for the communication of these same truths, once they have been discovered; or, in other words, that whereas ancient pagans could not have discovered them, modern pagans can learn them from the teachings of Christian philosophers. If all (pagan) truth belongs to Christianity, as the spoils of the Egyptians belonged to the Jews, so all (Christian) truth belongs to men in general, in so far as these truths are strictly evident or demonstrable in the light of natural reason.

[116] Cf. *What Man Has Made of Man*, New York, 1937: Epilogue, pp. 235-244;

It should be noted that it is the separation of science from philosophy which I emphasize primarily, not the actual accretions in knowledge about nature which have been gained by scientific work. The latter, of course, do play an important role in relation to a sound development of the philosophy of nature;[117] but it is the understanding of an *essential* distinction between science and philosophy (as two methods of knowing, having distinct formal objects within the sphere defined by the first grade of abstraction) which is absolutely indispensable to a rectification of ancient and mediaeval logic—especially to the extent that *major* logic tries to give a formal account of the concepts, judgments, and reasonings productive of " scientific " knowledge. I put the word " scientific " in quotation marks because of an ambiguity we now see, which the ancients and mediaevals did not see. They used the word " scientific " without distinction for two sorts of knowledge of nature which we now distinguish as *philosophical* and *scientific*. If our distinction is right and justified, then it follows necessarily that the ancient conception of " *scientia* " was a confused notion—certainly so on the first grade of abstraction.[118] And it follows with equal necessity that Aristotle, working with a confused, i. e., inadequately distinguished, notion of " *scientia*," could not possibly have avoided basic errors or profound inadequacies in his logical treatises, especially those, such as the *Posterior Analytics* and parts of the *Topics*, concerned with the definitions to be employed in " science," the modes of demonstration to be used, the induction of principles, and the general theory of " scientific " taxonomy. I say, therefore, that Aristotle's errors and inadequacies in logic are as excusable as his errors in metaphysics, though the reason for his making them and our grounds for excusing him—without condescension in either case—are different.[119]

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also " A Dialectic of Morals," Part I, in *The Review of Politics*, III, 1 (January, 1941): pp. 3-13.

[117] Vd. J. Maritain, *The Degrees of Knowledge*, New York, 1938: Ch. I and III; pp. 3-69; also his *Science and Wisdom*, New York, 1940: Part I, esp. pp. 3-69; also his *La Philosophie de la Nature*, Paris, 1935.

[118] As I have already pointed out, the distinction between science and philosophy is of most importance on the first grade of abstraction; of some importance with respect to mathematical objects; and of least importance with respect to knowledge of being, where science, in the modern sense, makes and can make fewest pretensions. Vd. fn. 100 *supra*. For M. Maritain's most recent discussions of the essential distinction between philosophy and science, vd. *Scholasticism and Politics*, New York, 1940: Ch. 2; and *Science, Philosophy and Religion, A Symposium*, New York, 1941: pp. 162-183.

[119] In one sense, the reasons are alike: the cultural limitations of Greek thought. But, in another sense, the reasons are different in that, with respect to logic and

I shall not offer here a general critique of the *Organon*.[120] I wish to deal only with its theory of "scientific" taxonomy, with the analysis of definitions and the account of the "predicables," for these are the only matters relevant to my historical hypothesis about the origin of the mistaken view of species. I turn, therefore, at once to a brief exposition of the two steps I have already mentioned.

17. *The first step* is to see that Aristotle's logical account of species, genera, etc., was colored by the "scientific" method which he himself applied in the classification of living things, a method exhibited in his *Historia Animalium*, and explicitly set forth in the first book of his *De Partibus Animalium*.[121] That method is the method of extensive abstraction. It can yield only accidental classifications, not essential ones. The hierarchy of classes which such taxonomy generates can be nothing other than the extensive hierarchy of *races* (of improper, or accidental, species and genera); and hence the resultant theory of specification, the theory of the genus and of its mode of differentiation by positive determinations rooted in distinct (accidental) perfections, is only one of two possible accounts of species, genera, and differences. There is nothing wrong with this account *in itself*, for it is the correct account of accidental classification. But when this account is taken to be the *whole* truth, or when it is taken to be an account of essential classification, because of failure to distinguish between *proper* and *improper* species (i. e., species and races), then serious error results.

In *De Partibus Animalium*, I, 2-4, Aristotle attacks the method

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physics, the cultural limitations of Greek thought are shared equally by mediaeval philosophy. Should there be Thomists willing to admit Aristotle's limitations in metaphysics, but not willing to admit similar limitations in logic and physics, it would look as if, in the latter case, they were loath to admit the limitations of St. Thomas about matters in which his faults are as appropriate historically, and as excusable, as Aristotle's. And this would be a fault in modern Thomism much worse than the errors in logic and physics under discussion; it would be the fault which was universal among the decadent scholastics of the 15th and 16th centuries and which has, ever since, made "scholasticism" such a bad name. Vd. the encyclical *Aeterni Patris*: "If there be in the scholastic doctors any excessive subtlety of inquiry, any inconsiderable teaching, anything not consistent with the ascertained conclusions of a later generation, anything in any way improbable, we have no mind to hold that up for imitation."

[120] I have indicated some other points of criticism in *The Problem of Species* (pp. 244-246); The Thomist, II, 264-66, but a general critique would require a long work devoted to nothing else. I hope to do that later.

[121] Though the taxonomic problem is somewhat different in the case of inanimate things, the method Aristotle employed in the case of elements and mixtures is formally the same. Vd. *De Caelo*, III, 3-8; *De Generatione et Corruptione*, II, 1-5.

of dichotomous division, and the use of privative and negative terms. The right method to be followed in specifying animals, he tells us, makes manifold divisions within a genus; and to do this we must not only rely mainly on positive differentiae, but we must differentiate by means of many determinations taken in conjunction, rather than singly.[122] And he concludes this whole discussion with the remark:

We have now touched upon the canons for criticizing the method of natural science, and have considered what is the most systematic and easy course of investigation; we have also dealt with division, and the mode of conducting it so as best to attain the ends of science, and have shown why dichotomy is either impracticable or inefficacious for its professed purposes. (*De Partibus Animalium,* I, 4, 644^{b}16-19).

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[122] "Some writers propose to reach the definitions of the ultimate forms of animal life by bipartite division; but this method is often difficult and often impractical" (*op. cit.,* 642^{b} 5). "Privative terms inevitably form one branch of a dichotomous division, . . . but privative terms in their character of privatives admit of no subdivision; . . . yet a generic differentia must be subdivisible, for otherwise what makes it generic rather than specific" (*ibid.,* 642^{b} 21-26). "Even with differentiae capable of this specific division it is difficult enough to make classifications so that each animal shall be comprehended in one sub-division and not in more then one; but far more difficult, nay impossible, is it to do this, if we start with a dichotomy into two contradictories" (*ibid.,* 642^{b} 3-35). "As we said then, we must define by a multitude of differentiae" (*ibid.,* 643^{b} 25). "It is impossible that a single differentia, either by itself or with its antecedents, shall express the whole essence of a species" (*ibid.,* 643^{b} 30). "It is impossible then to reach any of the ultimate animal forms by dichotomous division" (*ibid.,* 644^{a} 10). All these passages, especially in the complete context of the chapters from which they are taken, plainly say that the method of differentiation by which we divided *animal* into two ultimate species, *man* and *brute* (the *non-rational* sensitive into the *rational* sensitive and *irrational* sensitive), will not apply when we try to divide *brute,* as a *genus,* into subordinate forms of "animal life." Aristotle is quite right in saying this, and he has revealed the precise difficulties we met with when we tried to use such terms as mobile and immobile, vetebrate and invertebrate, or oviparous and viviparous, as *single differentia.* Vd. fn. 72 *supra.* Aristotle is only wrong in not realizing that the method which he is rejecting is the right method for essential classification, whereas the method he says should be employed *in its place* is the right method *only* for accidental classification. The "ultimate forms of animal *life*" to be reached by this method must be races; they cannot be *proper species.* On the use of manifold differentiae as an essential point in the second theory of species, vd. *The Problem of Species,* pp. 76, 122, 151-155, 188-195; The Thomist, I, 262, 420; II, 92-96, 129-136. As I have pointed out (vd. footnote 57, *supra*), the use of manifold determinations to differentiate one (improper) species from another causes the extensive hierarchy to be imperfect in still another way: not only are there generic interruptions in the gradation of such species (from lower to higher in the scale of being), but one species may be higher than another in certain respects (some of its manifold determinations) and lower than that other in other respects. The extensive

He should have gone further. He should have said that the method of dichotomous division, using privative and negative terms, is more than impracticable and inefficacious. It is, strictly speaking, an *impossible* method for making significant divisions of *brute* animal life, precisely because *brute* is a proper species, and any further division of it must employ accidental determinations, positive and manifold. He would have spoken the whole truth here, if he had known that his own "scientific" works were *scientific* and *not philosophical,* if he had known that the method he was proposing is the method of science and not of philosophy. But such distinctions were totally unknown to Aristotle. His own references to *De Anima* in *De Partibus Animalium* show that he saw no difference between the method of the two works. It never occurred to him, therefore, to suspect that his classification of three souls, and his consequent definition of three species of living things, followed a radically different method, depending on a different theory of the genus, and of its differentiation by positive and negative determinations rooted in one and the same (essential) perfection.[123]

Failing to make these necessary discriminations, Aristotle confused two different logical accounts of species, genus, and difference. Whereas he should have given us an analysis of two quite different hierarchies of terms, each with its own appropriate principles, he gave us only one analysis in the *Posterior Analytics* and the *Topics.* That analysis cannot help being both erroneous and inadequate, in so far as it mixes principles which should be separated, and omits distinctions which should be developed. Seeing this is the first step in my historical hypothesis, the one which explains the *origin* of the mistaken view of species—the ultimate cause of the error in Aristotle's logic being his ignorance of the distinction between the *science* and *philosophy* of nature.[124]

18. *The second step* is to see that Aristotle's works contained a theory of genus, difference, and species, which diverged radically

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(accidental) hierarchy is thus multilinear, in contrast to the unilinearity of the perfect (essential) hierarchy. Races cannot be well-ordered, as species are.

[123] The only evidence of any suspicion that the two accounts could not be run together is the number of times in which Aristotle uses an accidental definition of man (as *featherless biped*), instead of *rational animal,* which he must have realized was a definition absolutely different from the sort capable of being achieved by the "scientific" method he is proposing.

[124] The cause here is plainly proportionate to the effect. Just as "*scientia*" for Aristotle included both science and philosophy in an inchoate state, so his logical analysis of species, genus, and difference, included, in an inchoate state, the principles of both essential and accidental classification. When that which is in an inchoate state is regarded as if it were not so, things which can be fully distinguished and well-ordered are treated in a confused and disorderly manner.

from the one given in the *De Partibus Animalium,* and applied in the *Historia Animalium.* This other theory conceives specific natures as grades of being, ordered in a perfect hierarchy. Its principles are indicated, though not explicity set forth, in the *Metaphysics,* and they are exemplified in the classification of souls in the *De Anima.*[125] My point here is not the one I have made before, namely, that Aristotle's logic fails to discriminate between the account which must be given of philosophical as opposed to scientific classification. Rather it is that Aristotle, as a philosopher of nature, failed to grasp the significance of his own analysis of three kinds of soul, failed to see that this analysis required him to affirm explicitly that there were only three *proper* species of living thing, failed to realize, in consequence, that all the subordinate forms of *brute* and *plant* must be accidental types.[126]

The combination of error in logic with error in the philosophy of nature had grave historical consequences. For centuries, the influence of Aristotle's thought upon the Latin west came by way of commentaries on his logic, chiefly Porphyry's *Isagoge* and Boethius' gloss thereon. The *Isagoge* was intended as an introduction to the *Categories,* but Porphyry followed that totally unAristotelian pro-

[125] The theory which can be found in *Metaphysics,* VIII, X, and in *De Anima,* II, 3, can also be found in similar portions of St. Thomas's work: in *De Ente et Essentia,* Ch. II, and in the Treatise on Man in the *Summa Theologica* (I, 75-77). By "similar portions" I mean passages which are strictly *philosophical,* (not *scientific*) in character. The *Metaphysics* is, of course, wholly philosophical, as is *De Ente;* but the *De Anima* (and the Treatise on Man) contains passages of both sorts. Yet in the part of the *De Anima* referred to, the concern is with species as grades of being, and the method by which Aristotle distinguished three kinds of souls (and thus defined three species of living thing) is clearly the method of intensive or formal abstraction. It is the only method by which essential classifications can be made. It is the method of philosophy, as opposed to the method of science, in the study of nature. And the hierarchy which is discovered by this method is necessarily perfect, for it employs principles of differentiation which are appropriate to ordering things according to grade of being. But the principles here referred to are nowhere explicitly recognized in the *Organon,* as radically different from the principles underlying the method of the *De Partibus Animalium* and the *Historia Animalium.* If anything, the *Organon* tends to express the latter set of principles rather than the former, though it does so unwittingly, largely because of the illustrations used.

[126] In the *De Anima* itself there are passages which reveal these failures, passages which definitely speak of many species of *irrational animal.* Vd. St. Thomas, *In De Anima,* II, 5, # 294; II, 7, # 314. There are similar passages in the Treatise on Man, vd. *Summa Theologica,* I, 75, 7, ad 2; 76, 3; cf. *QQ. Disp. de Anima,* Q. 1, A. 7. The ultimate cause of these failures on Aristotle's part is the same as the cause of the defects in his logic, namely, ignorance of the essential distinction between philosophy and science in the study of nature. Hence we cannot read the *De Anima* or the Treatise on Man, as if they were purely philosophical treatments, for admixtures of science penetrate their discussion of specific natures.

cedure of using a discussion of the problems to be found in the *Topics*, as a way of showing how one passed from *summum genus* to *infima species* in the various predicaments, chiefly substance. Porphyry and Boethius were themselves primarily concerned about the then incipient "problem of universals." Furthermore, they were neo-Platonists misusing Aristotle's logical distinctions to describe the order of nature. When to all these factors is added the crucial fact that these writers fail to see the essential distinction, in object or method, between the philosophical and scientific parts of Aristotelian teaching, it is not difficult to unearth the seeds from which sprang the Tree of Porphyry, that noxious growth which cast its distorting shadows over the study of nature for many centuries. Porphyry had somehow gathered the essential division of corporeal substances into *body, plant, brute, man*—probably from indirect acquaintance with the *De Anima*. With this he mixed his own theory of the five predicables (derived, as I shall show, from his misreading of the *Topics*, which reflects in a confused way both the philosophical taxonomy of the *De Anima* and the scientific method of the *De Partibus Animalium*, though the latter predominates. The damage was thus done. Boethius merely canonized the errors.[127]

This second step in my historical hypothesis explains how the original error in Aristotle's *Organon* came to have such great currency in the tradition of Aristotelian thought. The Tree of Porphyry, or its implications, still prevails in scholastic textbooks of logic. In addition, this second step explains not only the persistence of the mistaken view, but also its spread from logic to the philosophy of nature, due to the fact that the Porphyrian diagram was given an uncritical ontological interpretation: *as if anything a logician referred to as a species was* properly *a species; as if the decision as to which concepts are properly specific could be made in logic.*[127a]

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[127] The Tree of Porphyry epitomizes the confusions latent in Aristotle, by explicitly going from essential to accidental distinctions without recognizing any difference of principle whatsoever. The Tree is nothing but a schema which combines our Diagrams 1 and 2 by running them together as if they were both expressions of the same set of principles.

[127a] The logician *qua* logician is competent only to state the *formal* criteria for distinguishing proper from improper species (as, e. g., in terms of mode of differentiation); but only the philosopher of nature can say, in the light of his knowledge of man and of inferior beings, which concepts are properly specific, i. e., which natures are properly conceived as specific; similarly, only the natural scientist can say, in the light of all his empirical data, which racial (improperly specific) concepts are generic, and which specific. On this last point, vd. fn. 130, *infra*. For the logician to proceed as if he were competent to make these *material* discriminations involves him in an uncritical interpretation of his own logical, or

Instead of cutting down the Tree of Porphyry, and exposing the field of nature to the light of day, the philosophy of nature has for centuries been content to view things under the distortion of its shadows. Perhaps such heroic action was impossible in the middle ages, since the only instrument capable of cutting the Tree down is the sharp edge of the distinction between philosophy and science.

It is unfair to Porphyry and Boethius, however, to charge them with being *more than accessories* in either the perpetuation or the spread of the mistaken view. If they had never existed, and no commentaries on Aristotle had ever been written until, in the thirteenth century, all his works were available for study, the mistaken view would have still prevailed in the tradition of Aristotelian thought, because it existed in Aristotle's own work, both in his logic and in his "philosophy of nature"; and because no thirteenth century commentator could have corrected the errors for exactly the same reason that Aristotle committed them—a failure to understand the distinction between science and philosophy in the study of nature. The point is not that the errors are deeply hidden from view. On the contrary, they would seem to be almost painfully evident to anyone who tries to connect his reading of the *Metaphysics* and *De Anima*, on the one hand, with his reading of the *Historia Animalium*, and the *De Partibus Animalium*, on the other (and both in relation to the *Organon*). Yet until the reason for the difference between what is said about species in these two groups of works is itself understood, the light is not available whereby the reader can discover these errors.

There is one further point about the importance of Porphyry in this story. With regard to the matters here being discussed, the tradition of Aristotelian logic, especially the scholastic tradition, is strictly not Aristotelian but Porphyrian. The point is not the one now generally recognized, namely, that Porphyry enumerated five predicables, whereas Aristotle is *supposed* to have named only four. The difference goes much deeper than that, *for the whole notion of a set of* predicables *is Porphyry's own invention.* Strictly speaking, there is no discussion of predicables anywhere in the *Organon*, certainly not in the *Topics*. Let me explain.

In the *Topics* (especially I, 4-9), Aristotle is concerned with the inductive process of getting knowledge about "species"—the object of "scientific" knowledge. He there makes a fourfold division of

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formal, criteria, for in doing so he misuses these criteria. Cf. fn. 37, *supra*. This distinction between the spheres of logic and ontology with respect to the problem of species is indispensable to reaching a true view of these matters; violation of it resulted in the Porphyrian errors.

problems: first, a twofold division of problems into those concerning essential and those concerning accidental matters; and then a further division of the essential into problems concerning genera and definitions, and of the non-essential into problems concerning properties and accidents.[128] These four (genus, definition, property, accident) are the subjects (topics) about which argument takes place in the discussion of "species." They are also the four loci of inductive problems in the "scientific" investigation of "species." Aristotle is not at all concerned with a classification of universals into fundamental types, according as they are differently predicable of first substances. If the word "predicable" signifies a universal so considered, then Aristotle gives no account of the predicables. His analysis of the four problems (topics of discussion and inquiry) concerning "species" *permits* a classification of universal terms only in so far as universals can be distinguished as they enter into the solution of one or another of these problems. But if such distinction be made in Aristotle's own context, genus and definition must be mentioned, whereas species and difference must be excluded.

This sharp divergence between Aristotle's four loci of problems (genus, definition, property, accident) and Porphyry's five predicables (genus, difference, species, property, accident) is intelligible only if we see that Porphyry was concerned with a totally different phase of logical inquiry. He was writing an introduction to the *Categories* and was therefore concerned, not with the problems of "scientific" research and discussion about "species," but with the theory of predication itself. Hence he properly took, as a fundamental canon, Aristotle's own basic maxim that all predication is of first substances. But what different modes of predication are there, when first substances are taken as subjects? Aristotle proposes a fourfold classification of terms (neither predicable nor inherent, predicable but not inherent, inherent but not predicable, both predicable and inherent),[128a] which underlies the distinction between predication *per essentiam* and predication *per accidens*; but Porphyry must have perceived verbal connections, between distinctinctions made in the *Categories* and those made in the *Topics*, which led him to convert the fourfold division of problems (as in the *Topics*) into a fivefold classification of the types of universals which are predicable of first substances. Hence, the fact that he employed material from the *Topics* in writing an introduction to the *Categories* caused Porphyry to transform the topical analysis of *problems* (concerning second substances, i. e., "species") into

[128] *Op. cit.*, 101^{b}18 ff., 103^{b} 15-37; cf. *Categories*, 3^{a} 22, and *Prior Analytics*, 43^{b}.
[128a] Vd. *Categories*, 2.

his own, quite novel, analysis of *predicables* (having first substances as their subjects). The change in the number of terms being classified, and the change in the precise character of those terms, thus becomes thoroughly intelligible, for just as species and difference should not be mentioned when one is concerned, as Aristotle was, with a division of the problems about "species," so species and difference should be named, and definition omitted, when one is concerned, as Porphyry was, with a division of all universal terms, predicable of first substances, into their fundamental types.

It can be said *against* Porphyry that he misread Aristotle, especially the *Topics*; but it can be said *for* him that he discovered a genuine logical problem (how many types of universal can be predicated of first substances?) which Aristotle failed to consider. Furthermore, this problem is thoroughly proper within the essential scope of Aristotelian logic, even if Aristotle himself did not consider it, and even if it was discovered by a neo-Platonist through a characteristically neo-Platonic misunderstanding of the *Organon*. In any case, there is no question that the mediaeval, and modern scholastic, tradition in logic is Porphyrian, in so far as it follows Porphyry's fivefold classification of predicables, rather than Aristotle's own fourfold classification of problems.[128b]

These facts do not alter the historical hypothesis here being suggested—that the mistaken theory of species arises from a fundamental error in Aristotle's logic, and persists through the Porphyrian transformation. If Aristotle had separated proper from improper species—true species as the objects of philosophical analysis, from races as the objects of scientific investigation—then Porphyry, in following Aristotle, would have enumerated *at least six* predicables, instead of *five*, for in transforming Aristotle's discussion into an account of universals as predicable of first substances, he would have been forced, in the interest of exhaustive analysis, to name *race* as one type of universal predicate.

19. I should like, therefore, to complete this historical hypothesis by stating briefly how Aristotelian logic would have to be reformed, in view of the truth about species. I do this to suggest positively what an Aristotelian (or, shall I say, Porphyrian) account of definition and of the predicables would have been like, had Aristotle fully recognized the distinction between an intensive, or essential,

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[128b] Vd. *Summa Totius Logicae Aristotelis* (classified by Mandonnet as spurious among the Opuscula of St. Thomas): Tractate I; cf. Averroes, *Expositio Media in octo libros Topicorum*, Lib. 1; Maimonides, *Guide for the Perplexed*, New York, 1928: Ch. 51, 52.

and an extensive, or accidental, hierarchy. By contrast this should make the error in traditional logic very clear.

The correction can be stated in a single sentence. In the exposition of the predicables (the ultimate logical categories for classifying universal predicates), the logical concept, *race*, must be added to the traditional five: *genus, difference, species, property* and *accident*.[128c] *Race* is a logical concept, just as the others are; it is a second intention; it is predicable of other concepts which are first intentions; and, as predicated of these concepts, it explicates the intentionality with which they, in turn, are predicated of first substances. The indispensability of this logical concept (*race*) can be seen from the fact that without it we can give no account of a whole class of universal terms—all the terms which have these two charac-

[128c] To put this point in strictly Aristotelian terms I should have to say, not that Aristotle omitted the concept of *race* from his list of predicables, but that Aristotle failed to distinguish between *species* and *race* as, respectively, the focus of philosophical and scientific problems. Had he made this distinction, he would then have set forth two sets of four problems each: four problems concerning *species*, and four problems concerning *race;* and the two sets would have been analogous, as essential problems about genus, definition, property, and accident, on the one hand, and accidental problems about genus, definition property, and accident, on the other. With sufficient evidence before his eyes (the perfect hierarchy of species in the *De Anima* and the accidental classification of animal types in the *Historia Animalium*), Aristotle could not see what any of us can see today—what contemporary scholastics see when they feel obliged to distinguish between "natural" and "systematic" species, what Maritain calls our attention to when he cautions us to distinguish between "proper" and "improper" species. We see what Aristotle could not, because we cannot help being aware of the fundamental difference in method underlying philosophical and scientific taxonomies. But so long as we adhere to Aristotle's account of the problems of "science," inadequate because of what he could not see, we will not be able to give adequate logical expression (whether in terms of predicables *or* problems) to what we, in contrast, do see.

In explaining the full significance of this point, I shall talk in Porphyrian, rather than Aristotelian, terms, because, as I have pointed out, traditional logic is Porphyrian. I make the point, therefore, in terms of the omission of *race* from the list of predicables. But it is precisely the same point which is being made, whether we speak of *problems* or *predicables;* for, if there is no distinction between *species* and *race*, there will be only four problems and, in the Porphyrian transformation, only five predicables; but if *species* and *race* are distinguished, then there must be eight problems (four about proper, and four about improper, species); and, in the Porphyrian transformation, there will be ten predicables; or nine if no distinction can be made between the *difference* constituting an accidental type and its *properties*. The reason for this will become apparent in the following discussion. Here suffice it to repeat that my whole historical point can be made either by saying that Aristotle should have considered two sets of problems, focussed respectively on *species* and *race*, or by saying that Porphyry (and traditional logic) should have named *race* as one of the predicables and, in giving an exhaustive enumeration of them, listed nine rather than five.

teristics: (1) being inferior, according to comprehension and extension, to the proper species, *man, brute, plant,* etc.; and (2) being reductively in the category of substance. It cannot be said that such terms as *negro* and *Caucasian, oyster* and *elephant, mushroom* and *rose,* are not universal concepts, predicable of many. It cannot be said that they are capable of being treated, as universals, under any of the nine categories of accidents. Nor can they be predicated as *difference,* or *property,* or *accident,* is predicated. If our analysis of universals as predicable is to be complete, we must, therefore, add a sixth logical concept to the five traditionally enumerated. That sixth predicable is the logical intention of *race.*

Two consequences will be seen at once. In the first place, *race* stands in a peculiar relation to *species.* For as *species* is an essential unity, constituted by *genus* and *difference,* so *race* is an accidental unity, constituted by *species* and *accident.* Hence if it be said that there is no need to include *race* (because it is already potentially present in *species* and *accident*), the same thing can also be said about *species* (which is potentially present in *genus* and *difference*). The predicables should, therefore, be either six or four, but not five. Furthermore, if the logician is obligated to distinguish between *proper* and *improper* species, there is a great advantage in recognizing that *improper* species are not species at all, but a radically different kind of term, namely, *race.*[129]

[129] I cannot, in brief compass, give a full account of the significance of *race* as a predicable. But I should like to call attention to the following points. (1) If the improper use of the word "species" by logicians is recognized, it is not sufficient to dismiss this improper usage as mere ambiguity; something is being signified, and the signification of the word "species," improperly used, must be analyzed. Obviously what is being signified is a whole group of universals, reductively in the category of substance. (2) That *race* is a logical concept, a pure second intention, can be seen in the false syllogism: "Jumbo is an elephant, elephant is a race (of brute), hence Jumbo is a race." As in the case of similar false syllogisms, involving *species* and *genus,* the truth in the conclusion must be expressed as follows: "Jumbo has a racial nature." (3) Whereas *genus* and *difference,* in the case of *proper species,* are both terms in the predicament of substance, the "genus" in the definition of a *race* is predicamentally a substance, and the "difference" is predicamentally an accident. (4) In the definition of a race, the "genus" is a proper species only in the case of races on the highest level of generality in the extensive hierarchy, those formed by the addition of the first accidental differentiae to essence; in the case of races on all subordinate levels, the "genus" is simply a more general race; but since every race is reductively in the category of substance only by virtue of the specific essence to which accidents have been conjoined, every race can be defined by stating a proper species as the "genus" and then enumerating the differentiating accidents in the order of their generality. (5) It is necessary to give a metaphysical account of racial natures, just as we give a metaphysical account of specific natures, in the light of which we can see that modes of predication follow modes of being. I

And in the second place, just as *species* signifies the object of a real or essential definition, so *race* signifies the object of a nominal or accidental definition. But, in either case, definition must be by "genus" and "difference." Hence we come to see that the concept *race,* because it signifies the object of accidental definition, requires us to employ each of the five familiar predicables in an accidental mode of signification. There must be racial genera and racial differences, as there are the genera of species and specific differences. We have already seen this to be so, in our analysis of the kind of genus which is determinable by two or more positive differences, and the kind of positive difference which is contrary to another positive difference, because each is rooted in a contrary (accidental) perfection. Furthermore, there must be racial properties and racial accidents.[129a] That this is so it will be discovered by anyone who studies scientific taxonomies. Finally, there is the racial species itself, which signifies the object of an accidental definition.

To give an adequate account of the predicables, therefore, one must enumerate them in two distinct series: *first,* the set of terms which have *proper species* as their center, including *genus* and *difference* as constituting essential definition, and *property* and *accident,* as following necessarily and contingently from the essence defined; *second,* the set of terms which have *race* (or *improper species*) as their center, including the type of *genus* and *difference* which constitute an accidental definition, and the type of *property* and *accident* which follow, in distinct ways, from the racial character as defined. Since the *difference* constituting a racial type is, predicamentally, an accident, there is probably no way to distinguish a racial *difference* from racial *properties.* If we make this second enumeration by speaking of racial genera (or generic races), racial differences, or properties, racial species (or specific races), and racial accidents, it will be seen that we have two sets of predicables, the second set *as a whole* being generated by the logical concept *race,* itself derived from the original five predicables by the composition of *species* and *accident.* These two sets of predicables formulate, respectively, the principles of the two distinct hier-

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have suggested some of the elements of such an account in *The Problem of Species* (vd. 72-75, 81-82, 188-198, 246-276; THE THOMIST, I, 258-61, 267-68; II, 129-139, 266-86), but much more work remains to be done on this, and I shall return to it in a later work on the problem of generation.

[129a] For some suggestions concerning metaphysical grounds for the distinction between racial properties and racial accidents (i. e., between the necessary and contingent accidents of improper species or accidental types), vd. my discussion of inseparable and separable accidents in *The Problem of Species,* pp. 192-195, 254 ff.; THE THOMIST, II, 130 ff., 274 ff.

archies—the essential and the accidental. They provide, furthermore, the logical matrices for two distinct methods of knowing the natures of things—the philosophical and the scientific. And, finally, they show us how the two hierarchies can be ordered to one another, as well as distinguished, by reason of the fact that the second set of predicables, *as a whole,* is an expansion of the logical concept *race,* derived from the first set of predicables by the combination of essence (species) and accident. In these terms, too, the philosophy and the science of nature can be well-ordered, as well as distinguished, and there need be no conflict or disharmony between their diverse taxonomies.[180]

In the light of the foregoing, I conclude that no logical theory of *species* is adequate unless it employs the concept *race* as a basic category in the manner suggested. Without this concept, and its derivatives, confusion and disorder must result, for the traditional five predicables cannot account for all the predications which occur in our knowledge of nature. Thus, we see the profound inadequacy in Aristotle's logic, in that the account of the predicables which it generates and its account of definition, could not be applied to both the *De Anima* and the *De Partibus Animalium* without confusion and equivocation; and at the same time we see the direct cause of this inadequacy to be a failure to recognize that, in the one case, proper species are being classified, and in the other, merely

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[180] I have pointed out the respects in which the intensive, or essential, hierarchy is finite. In contrast, the extensive, or accidental, hierarchy is potentially infinite, i. e., in the horizontal axis of Diagram 2, as we pass from terms of maximum to terms of minimum generality. There is, of course, a fixed upper limit, for the supreme accidental classes are proximate to the proper species which constitute the essential hierarchy; but there is no fixed lower limit, for there is no principle which stops us from making further accidental determinations. And, furthermore, there is no principle which tells us how many levels of generality we shall employ in constructing the extensive hierarchy. This indicates the contingency which is intrinsic to scientific classification *because it is accidental;* this explains why scholastics have come to call the "species" distinguished by science, "systematic," i. e., not "natural." But, in another sense, of course, the scientific classifications are natural, for there are, in fact, racial natures which can be classified. And the scientist has good reason for regarding some of his classes as *more natural* than others, namely, the kinds he calls "species" as opposed to the kinds he calls "varieties" or "genera," "phyla," etc. A reformed Aristotelian logic, concerned with the analysis of scientific as well as philosophical judgments, has an obligation to formulate the rationale of scientific classification, considering especially the factors of contingency and necessity which make some of the scientific distinctions *more natural than* others. All of this would be done in a thorough development of *race* as a predicable, for in treating its derivatives we would deal with what scientists call "phyla," "genera," "species" and "varieties." Cf. *The Problem of Species*: pp. 246-276; The Thomist, II, 266-96.

races. The ultimate cause responsible for this failure was, of course, the inchoate state of "*scientia*" as including both science and philosophy without distinction.

20. I wish to repeat that the explanation I have just given of the origin and persistence of a mistaken view about species (and all that is related thereto in logic and the philosophy of nature) is offered as an hypothesis for historical research, *only on the assumption* that what I have claimed to be a demonstration is genuinely so. This last remark calls for one word more. I am aware of the fact that, within the boundaries of this one essay, I both confess to having made a serious error in an earlier phase of this work, and also claim now to be certain about having rectified that error and about having demonstrated a solution of the problem in consequence. I appreciate the doubts that this is likely to arouse in a reader's mind. The reader may be justified in such doubts, whether more or less than if I had not confessed to error, I cannot say. But the reader's real concern must be, as mine is, with the truth about the philosophical matters under consideration. His aim must be, as mine has been, to try to answer the basic questions, here raised, with certitude. The philosopher's task is to demonstrate. Even though errors occur in the process, he must not be discouraged from continuing in the same way and toward the same goal. For it is only by making his best efforts to demonstrate that he will enable others to correct basic errors and to concur with him in clearly achieved truth.

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ANALYTICAL OUTLINE OF ARTICLE

I. INTRODUCTION

1. Relation of this work to *The Problem of Species.*
2. Relation of this work to "Problems for Thomists."
3. Preliminary statement of the basic error in *The Problem of Species,* which falsified the issue.
4. How that error was corrected, and the consequences of its correction.
5. Outline of what is to follow.

II. PRELIMINARY CLARIFICATIONS

6. *Verbal*: the word "species" and the concept *species*; the distinction between "ontology" and "logic."
7. *Philosophical*: the problem of universals—the community of specific natures vs. the unity of concepts.

III. REFORMULATION OF THE ISSUE

8. Introductory outline.
9. Analytical account of the error in prior formulation of the first theory, and of the false issue it generated.
10. Elimination of the error: the first theory rectified.
11. Summary of the true issue: between the second theory and the first theory as rectified.

IV. THE ISSUE RESOLVED

12. Disproof of the second theory.
13. Proof of the first theory (as rectified).

V. CONSEQUENCES OF THIS RESOLUTION

14. Final formulation of two types of hierarchy, basic to the distinction between natural science and natural philosophy in object and method.
15. Two minor points: (a) analogical predication of genera and species; (b) metaphysical account of genus and difference in terms of common matter and substantial form, with an analysis of the distinction between natural and logical genus.

VI. CONCLUSION: AN HISTORICAL HYPOTHESIS

16. Definition of the mistaken view of species as it occurs in the tradition of *philosophia perennis*, with an explanation of why the error is excusable.
17. First step in the hypothesis: origin of the mistaken view.
18. Second step in the hypothesis: persistence and spread of the mistaken view.
19. Completion of the hypothesis by a positive suggestion of how the error might have been avoided.
20. *Apologia.*

A Companion to the Summa, Volume III—*The Fullness of Life*. By Walter Farrell, O. P. New York: Sheed & Ward, 1940. Pp. viii + 530, with index. $3.50.

This is the third of four volumes, the second to appear, in which the author attempts to restate the thought of St. Thomas' *Summa* for the modern layman. The critical questions are three: first, what kind of transformation has Father Farrell made; second, for whom did he make it; and third, is the transformation effective for that audience.

Father Farrell says in the Foreword: "This whole work is not a book about the *Summa*, but the *Summa* itself reduced to popular language." "Reduced to popular language," might mean a translation of the whole *Summa*, or of certain parts, into modern English. But *A Companion to the Summa* is neither of these, for there are many additions as well as subtractions. These, together with the manner of expression, would seem to indicate that Father Farrell's transformation of the *Summa* is rhetorical. The specification of the paraphrase, then, lies in the additions, subtractions and the style.

It is a paraphrase of the entire *Summa*, insomuch as all the important conclusions from the body of the articles are asserted. However they are rhetorically argued, not demonstrated, and sometimes they are only asserted. The *Summa*, then, is reduced scientifically and dialectically in accordance with the rhetorical intention. Like the modern mathematician, Father Farrell takes the Euclidian figures of St. Thomas and stretches them into shapes recognizable to the modern man. And as in Topology, the formal relations in a certain sense are preserved. The entire architectural structure of the *Summa* is vaguely present, and the questions and articles of St. Thomas merge into each other receding to the intelligibility of a confused whole. Thus the objections and answers of St. Thomas are often omitted, and new and fewer objections are answered in a variety of ways. But the foundation for the answer is often only a striking example, and the objections are quickly dismissed, e. g., "Some men have described faith as an exaggerated optimism, a kind of super-confidence; but that was because they did not know the purpose of faith. Others have reduced faith to emotion; and that was because they did not know what faith was. Still others have cynically put under faith every bit of our rational knowledge of God; and that was because they did not know what man was" (page 4). Frequently the objections are not stated explicitly, but are worked into the answers, so that, almost before the reader knows it, whatever truth there may have been in the objection has been reverted to the doctrine, e. g., "The fact that charity is not from nature, nor doled out in pro-

portion to natural capacity for love, does not mean that there is nothing for us to do about it. A man cannot sit back and wait for something to happen, half-expecting, perhaps, that some morning he will wake up and, to the astonishment of his wife, suddenly be a saint" (page 71). But again an objection is clearly stated with the distinctions necessary to resolve it, e. g., "The point here is that such a discovery of a morality distinct from religion is quite possible. Religion is not the product of authority nor the radical explanation of morality, at least not on the natural plane. It flows from man's nature and is itself a command of natural law, not the foundation of natural law. A community with morality, a moral code, but devoid of religion, would be a community where the natural law was operating but not perfectly, where one of the commands of natural law had dropped out of sight" (page 251). Thus it would seem that whereas St. Thomas' treatment of objections was determined by scientific necessity, Father Farrell's method is determined by his intention of effectively communicating the doctrine as a whole.

The vitality of *The Fullness of Life* is different from the vitality of the *Summa*. The present work is very dramatic, stirring, hair-raising, humorous, consoling, where the *Summa* is sober and preeminently ordered. The *Summa* quietly embraces a great multiplicity in the unity of its order. The *Companion to the Summa* cannot stop in its momentum to consider the multitude of distinctions. But, different as they are in their modes of persuasion, the truths of which they persuade are the same. Ultimately, too, their authorities are the same. St. Thomas' arguments are founded on Scripture, Church Councils, writings of the Saints and of Philosophers as well as the certitude of human reason. Father Farrell's authority is the same virtually, but it is communicated in the rhetoric, seldom explicitly. Where St. Thomas says, "According to the words of St. Paul, 'The eye hath not seen . . . what things God has prepared for those who love him,'" Father Farrell says, "The fullness of faith, comparable only to the limitless fullness of infinity, makes our natural life seem a narrow, dark, blind corridor." Where St. Thomas says simply, "This follows necessarily from this which is itself necessary," Father Farrell says, "You must believe this, because, if you do not, you will be miserable."

Father Farrell has added long discourses contrasting the man who is seeking his proper end and through the proper means, and the man who has lost his way, who is not seeking the proper end, or who is not using the right means to achieve it. Almost every chapter ends with the same general peroration. For there are many deviations from the proper end, since the means are many, and any of the means may be substituted falsely for the end. There are many ways of being lost, and in each chapter a different deviation is disclosed. The argument is something like this: man is only happy in seeking his proper end, God; therefore by disregarding this

end to seek substitutions which can never satisfy his soul, he makes himself miserable. Inasmuch as theology is not only theoretical, the *Summa Theologica* is practically affective, that is, affective because man by his nature is moved to seek what he knows to be true and good. It is affective therefore only because the will and the passions are moved by understanding, whereas the present book is affective, besides, by the very mode of its expression.

Father Farrell is talking to men who are unfamiliar with the language of the scholastics. Hence he must speak to them in their language, use their vocabulary and idioms, and choose examples with which they are familiar to illustrate points with which they are unfamiliar. The examples and metaphors are important because they mediate between the experience of the layman and the thought of St. Thomas. To mediate they must be familiar to the layman and they must exemplify accurately the particular truth. Thus we find an abundance of metaphors, many of which are exceptionally good, and some of which are inept. Inevitably the precision of the thought of St. Thomas must be lost in a popular restatement; but it is unfortunate when, in addition, the precision proper to the rhetorical mode is also lost through confusing examples, e. g., "Faith is like a jack-in-the-box: the spring is the intellect; the lid, holding down the spring, is the will. The intellect is straining against the obscurity of faith. With the weakening of the will, through moral degeneration, the power to hold down the intellect becomes less and less until finally, with sufficient weakening of the will, the spring pops out—faith is lost" (page 11). Although this example exemplifies something profoundly true, it would only communicate to some one who is more schooled in theology than the layman for whom the book is intended. In the example, the will of which Father Farrell speaks is the will under the influence of the Holy Ghost, not the natural will simply. The intellect, on the contrary is the natural intellect rebelling against darkness. But without these distinctions it might seem as though the will and intellect were opposed principles in human nature, or that faith is retained through an opposition of natural principles, or even that the will is superior to the intellect. Occasionally the terms of a metaphor are not in the right order, e. g., "A child must be poured into warm clothes: charity must be poured into us" (page 71). Stated as a proportion this reads, child is to clothes as charity is to us, hence the terms charity and child are representing the same thing, and clothes and us. Another example of confusion in metaphor is, "Pictures, like persons, remain strangers if we see them in the sad, false light of solitude. Compared with the full, human richness it displays when flanked, say, by the mystery of a da Vinci and the delicate beauty of a Fra Angelico, a Titian in solitary grandeur is reserved, even sullen and pouting. We cannot always gather such a company on the same wall; but we have a mental

gallery that can be arranged and rearranged at our pleasure. It would be impossible, for instance, to hang side by side, in the same exhibit, the astounding picture of an angry Christ violently driving the money-changers from the temple and the pitiful picture of a modern racketeer mercilessly beating a small storekeeper for not paying 'for protection.' But arranged in such significant contrast in our mental gallery, they tell a story that could be told as graphically by no other means" (page 193). In this instance Father Farrell tries to make clear the order of mental images through the analogy of pictures in a gallery. Thus he says that the picture of Christ and the picture of the racketeer would not be appropriately hung side by side, but they are appropriately held together by the mind, that is, as images for justice and injustice. But the point he is making depends on the opposition between the order in the mind and the order in the arrangement of pictures. This is not to say that the thought is confused in these examples. What he intended to say here, was that, just as pictures can be arranged to illuminate each other in a gallery, so images can be arranged to illuminate each other in the mind; but pictures can be arranged incongruously. Yet from the metaphor it would seem that if the pictures are appropriately held together in the mind, they would be appropriately hung together in a gallery, too. An analogy cannot be applicable in every respect, but the similitude intended should stand out above the disparities.

On the other hand there are many delightful and accurate examples and metaphors. They are even exciting in their perfect mediation, when a very commonplace example throws light on a difficult point, e. g., "We are not only irritated at faith's darkness, we too often resent the very authority upon which faith rests. Behind this irritation there is a fear of error if a truth is not subjected to the judgment of our mind that is not unlike the uneasiness of a woman who is quite sure the house will not be cleaned properly unless she cleans it herself" (page 6); or, "The coins of religion which we jingle in our pocket as we go to pay our debt to God, have two sides; on the one is the protestation of reverence for the excellence of God, on the other the subjection of the creature who is man. We cannot split the coin to hand over the reverence and retain the subjection; if we try it we mutilate the coin, not only making it worthless but subjecting ourselves to punishment. We cannot have one side of a coin without the other; they are two sides of the same thing. More concretely, we cannot worship God without subjecting ourselves" (page 254).

Proper to this rhetorical mode there is a personal quality, no trace of which is to be found in the *Summa Theologica*. Father Farrell is speaking to a specific audience, whereas St. Thomas is speaking to the disciplined student of any time and place. There is a friendliness in Father Farrell's book which is a wonderful and necessary encouragement to those readers who would recognize their error. He makes a clear diagnosis of their error,

and at the same time he communicates an awareness of their dignity as human beings.

For whom, then, is this book intended? Not for beginners, simply, because St. Thomas himself wrote for them. In the prologue to the *Summa* he said, " Following the example of St. Paul who gave ' milk, not meat ' to ' little ones,' the Catholic teacher should so adapt his instructions that they will be useful to those who are just beginning the study of sacred science, as well as to those who already have a knowledge of divine wisdom. So, in this work I will try to write of Christian truths in such a way that my words will be instructive to beginners." St. Thomas' work is still read by beginners, but the beginner St. Thomas was thinking of, and who still exists today, is disposed by right education to the truths of faith and the authority of reason. But in addition to these, as a result of " universal education " in modern times, there is a large number of Catholics (in the invisible as well as the visible Church) who are not so disposed. Not realizing the inadequacy of their education they consider themselves morally and intellectually competent. In fact they have neither the rectitude of the peasant, nor the discipline of the student. This " universal education " has used reason to deny itself in the name of freedom, so that, ironically, the denial of what is beyond reason has led to the denial of reason itself. Thus the modern Catholic for the most part is divided, for his thought is opposed to his faith. And it is for these that Father Farrell seems to be writing. Particularly when they deny reason, men need the Saint of reason. But since the reason he stands for is being denied, he must be transformed into a rhetorician to attack modern sophistries. If Father Farrell's work fails to lead his reader to St. Thomas, it will be through its rhetorical weaknesses. Undoubtedly many readers will be brought through it to St. Thomas himself. But possibly some will be untouched because of its too insistent familiarity. Perhaps the incongruity of the appearance and the doctrine is justified by the needs of the modern reader; but it is possible that Father Farrell has forgotten how sensitive modern man is to appearance.

But what is more important Father Farrell is responsive to the needs of his generation. However disparate his method to the method of St. Thomas, he reveals himself a preacher of the Order of St. Dominic, whose ultimate intention is not to make philsophers, but to lead men through reason to sanctity. " The learned outside the true fold can be approached through disputation which shows the excellence of our teachings as compared to their own. To win the less learned, however, use should be made of metaphors, examples and stories, even as did Christ Himself, Who ' spoke to the crowds in parables, and without parables did not speak to them ' (Matt., xiii, 34) " (John of St. Thomas, *Cursus Theologicus*, I, q. 1, a. 1).

Charlene Schwartz, T. O. P.

The Philosophy of Physical Science. By Sir Arthur Eddington. New York: The Macmillan Co., 1939. Pp. ix + 230, with index. $2.50.

Sir Arthur has repeatedly made statements on problems similar to those he discusses in this book. Like many other physicists he evidently feels an intense desire for a clarification of the principles on which modern science rests and also for a justification of science as the only reliable approach to reality. He, therefore, attempts a thorough analysis of principles and methods, not hesitating to discuss even such subjects as existence and epistemology. Hence the work is of wider scope than the title indicates. Though not a fully rounded treatise on natural philosophy, Sir Arthur's book tries, at least, to lay the foundations of such a philosophy. In its intention it is truly philosophical, although it is far from philosophical in the way this intention is carried out.

The philosopher does not presume to pass judgment on physics; he does not even presume to understand the physicist's statements unless he has acquired some knowledge of facts and of methods. It is different with the physicist's attitude in regard to philosophy. A scientist may be somewhat suspicious of commonsense when he considers the ideas of the average mind on physics; he trusts commonsense without reserve when he approaches philosophy. That is, he trusts his own commonsense and the notions he has of philosophy and its methods. Of the latter he evidently has no clear idea; that there might be a method in philosophy, as definite as his own in science, is a thought the scientist does not consider at all.

Sir Arthur's book is just what one would expect from a man who is a specialist and, probably, an authority in his own field, but to whom philosophy is an unexplored country. The philosophy propounded in this book reminds one of those maps the first explorers made of the interior of Africa—out of proportion, fantastical, empty places filled in with the creatures of the explorer's imagination.

The general philosophical bases on which this work rests may be described as a naive Kantianism strongly colored by psychologistic prejudices. What in Kant is the achievement of *Bewusstsein überhaupt* becomes with Sir Arthur a characteristic of individual mental states. Referring to a quotation taken from C. E. M. Joad, the author remarks (p. 214) that "the conception of a sensum distinct from the sensing appears to have a purely linguistic origin; but the important conclusion that the sensum is something external to consciousness is based on the existence of a number of different ways in which it can be related to consciousness." This statement is enlightening. Apart from the influence of logico-positivistic notions noticeable in Sir Arthur's world of ideas, there is the curious notion of a sensum, not distinct from the sensing whereby it is apprehended, and yet "related to consciousness" in manifold ways. The denial of any difference existing between the sensation as mental state and the sensum

as transcendent object apprehended by means of sensation is, of course, based on an insufficient analysis of the facts of cognition. That the author has, in this regard, remained an adherent of philosophies which, though not quite abandoned, have become more than doubtful in recent times, is shown also by his remark on hallucinations. In fact he but repeats what was the common opinion some time ago; but what would Sir Arthur say if someone were to make assertions on physics no longer in accordance with the ideas of the physicists? If the philosopher is warned, and justly so, not to talk on science without having first acquired the necessary knowledge, let the scientist follow the same rule when he is going to talk on either philosophy or psychology.

Ever since the famous English scientist began to philosophize, it has been pointed out to him that his assertions are not as evident as he thinks them to be and that the principles on which he bases his conclusions are very questionable. These criticisms have not, it seems, induced the author to revise any of his ideas; his viewpoint is the same as the one he held several years ago in his book *The Nature of the Physical World.* We are told anew that it is not " things " we are aware of but " structure." " To be quite precise, it is structure of the kind defined and investigated in the mathematical theory of groups " (p. 147). It is not easy to see how this assertion fits in with the other on sensation: " The starting point of physical science is a knowledge of the group-structure of a set of sensations in a consciousness." The many " fragments of structure " arising in individual minds are collated, the gaps are filled in by an inferred structure, and we thus obtain the structure known as the physical universe. But we, that is, the individual minds, become aware of these fragments only by means of new sensations, resulting from the printed or spoken words of others. There seems to be no way out of this subjectivity; any " collation " is as subjective and belongs as much to an individual consciousness as original sensations. How there can be any " objective " knowledge of mere structures remains a puzzle which Sir Arthur's philosophy is not capable of solving.

The author's trust in the " structure " as the only object of knowledge, at least as far as science is concerned, is absolute. " I believe there are [here there is a series of eighty digits] protons in the universe and the same number of electrons " (p. 170). Why?—because the " theoretical calculation of the cosmical number N depends on the fact that a measurement involves four entities and is therefore associated with a quadruple existence symbol. . . . The cosmical number must be the total number of independent quadruple wave functions, which is found to be $2 \times 136 \times 256$ " (p. 76). There cannot be more or less elementary particles, or whatever one may call them, because the kind of structure chosen by the scientist or opposed by " sensations " does not allow for more. " Reason finds certain laws in nature, because they were put there first by reason," wrote

Kant. "Reason" in this statement is used in two senses; it signifies individual reason in the first, and *Bewusstsein überhaupt* in the second part. It is not easy to know what Kant really wanted to refer to when he spoke of the *Bewusstsein überhaupt*, but it is more than probable that he did not refer to individual and phenomenal consciousness.[1] These two senses are joined into one in Sir Arthur's philosophy, which thus becomes a psychologistic Kantianism—far from what the philosopher intended his system to be.

It is hardly necessary to enter into details. A philosophy resting on such questionable presuppositions is questionable in itself. To the author's assertion there applies a remark by E. Husserl, that it is not always science which speaks when the scientist speaks, and never less than when he speaks on "natural philosophy."[2] The philosopher is willing to learn from the scientist what the methods, the facts, the theories of science are. He is not willing to listen to the scientist when the latter speaks of philosophy without taking pains to make himself acquainted with philosophical principles and methods. The scientist is fully justified in criticizing the philosopher if the latter makes assertions about facts and theories of science on the basis of purely philosophical principles, but it is not science which can tell us whether we deal with sensations and structures, or with objective facts of which we are made aware by sensations and to which our theories refer. *Philosophica philosophice traduntur et . . . judicantur.* All our respect for the scientist Eddington and his achievements cannot hinder us from rejecting his philosophy as dilettante and utterly insufficient.

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Physics and Reality. Lectures of Aristotle on Modern Physics at an International Congress of Science, Cambridge, 679 Olymp., 1940 A. D. By KURT RIEZLER. New Haven: Yale University Press, 1940. Pp. 124.

The author is on the staff of the New School of Social Research, New York. He publishes this book as "a humble experiment in thought dedicated to those, who conscious of a widening cleavage between nature and man, are willing to inquire into its causes." To this end he imagines Aristotle returning from the land of shadows and delivering ten lectures to modern scientists. Four of these lectures form the first part, entitled "The Impasse"; the title of the second part is "The Other Way." The lecturer after having "invoked the gods according to my country's custom," dis-

[1] *Cf.* E. Herrigel, *Die metaphysische Form*, Tübingen: 1929.
[2] *Ideen zur reinen Phänomenologie*, Halle a. S.: 1913, p. 38.

cusses motion, classical and quantum physics, and event; this critical analysis is followed by studies on concreteness, substance, motion, time, the one and the many, nature and man.

It is not the admirable achievements of science which make "Aristotle" wonder; what amazes him is that the most intense experience man has, his own desire for knowledge, is not a subject of investigation. The further man penetrates into the laws of nature the further he gets away from it, the more elusive it becomes; man is separated from nature. "What, by Zeus, have you been doing?" says "Aristotle." Notwithstanding the degradation of nature implied in the faith of the theologians, theology embraced man and nature as one mystery, but this unity is rent for the scientist. He cannot help being human, therefore he squints toward theology amidst his numbers, and he feels guilty because he cannot help squinting. These remarks, taken from the first six pages, characterize the general attitude of the lecturer.

He proceeds to analyze motion which he understands as comprising all kinds of change. It is necessary to distinguish between the one problem implied in the assertion, "motion is," and the other referred to in the question, "what is motion." The scientist as such is not concerned with the meaning of "is"; he is intent only on discovering and formulating the order of all possible observations, and he limits his observation to the measurable, leaving out all non-measurable parts of his perceptions. Individual differences are eliminated; all observations refer to an anonymous subject, "a robot whose being consists in reading numbers from the pointers of your instruments." The scientist's "objective" reality is merely an intersubjective order relative to the robot observer. To this notion also refers the "is"; motion is within this order and defined by it. Classical physics, i. e., the physics prior to the quantum theory faces the problem of two unexplainable contingencies, the definite world-geometry and the initial constellation. Becoming is unexplainable, and unstatable as well. No reference to four dimensional space-time is of any help; "the world extended in time stands still." It is only because the physicist involuntarily relates his pre-scientific experience of motion to his four dimensional system of symbols that the semblance of rest to movement is brought about. The notion that time points in a certain direction is not deducible from the second principle of thermodynamics; it originates in immediate personal experience. Another serious difficulty arises in regard to the notion of substance. There is no "one"; there is only the whole cosmos and every determination of any "one," as a part within this whole, results from some separation made by the mind. Thus, "ones" exist not by nature—φύσει—but by an act of the mind—θέσει. The identity of the individual self becomes a perfect riddle. There is no legitimation for this theory in the space-time continuum. In a physics which is based on the notion of

" field " and defines matter by " field," motion does not move; when there is no motion, neither is there any rest.

The difficulties caused by quantum physics are, in the truth, the difficulties inherent in the fundamental concepts of classical physics. Quantum physics is faced by three difficulties: the relation between the observed process and the process of observing; the fact that all statements of microphysics are bound to the concepts of classical physics; the problematic nature of probability. The statements of this physics do not refer to any self-identical, individual subject; they refer to aggregates or classes. The data on which microphysics bases its statements are supplied by pointer readings; they imply notions like velocity, interval, potential. Microphysics is (as are its laws), secondary to the microphysical events, but the latter have to be stated in terms of this secondary knowledge. The development of physics from Galileo to Einstein is a gradual change of the frame of reference so as to make possible the incorporation of new facts. There is no possibility of a similar adaptation in microphysics, because the instruments obey the microphysical laws. The laws of microphysics refer to numerical probabilities, the distribution of which define a class, and the most that can be asserted of an individual case is that it belongs to some class thus defined. The statement that the psi function " makes a jump " is unjustified and unjustifiable, because in truth there is no real subject which could jump; the subject spoken of is only a grammatical one. All statements about elements are only probable; certainty is had only in regard to aggregates. What is probable? What does the vibrating of a probability wave mean? The answer is: the probability of an event—a very problematic notion. Also, there is the mystery of definite numbers, as the elementary quantum, or Planck's constant. They are inexplicable, mysteries. Event, in classical physics, is defined by motion. This is impossible in quantum physics; here, event has to define motion, but it certainly cannot be defined in terms of " jump."

Causality has been eliminated, quite logically, from classical physics. A cross section of three dimensions and infinitely small in the fourth dimension of time contains certain values, called parameters. They obey definite differential equations—the laws of physics. This is the assertion regarding physical causality; so far as physics is concerned this is a correct definition. No other causality can exist. Indeterminism, often spoken of by certain physicists, is not another system to be opposed to causality. Indeterminism is a pure negation, making no positive statement at all; it cannot, by itself, pass from negation to any positive assertion.

Aristotle's mistake was to interpret the movement of the celestial bodies by conceptions developed from living experience. The scientist of to-day inverts this mistake and attempts to interpret life and himself by the frag-

mentary knowledge of inorganic nature. Both mistakes can be avoided by devising a scheme of nature embracing reality as a whole. One has to revise the meaning of " is." Whether this attempt be christened physics, or metaphysics, or ontology does not matter; it has to be made.

" Aristotle " proceeds in the second part to talk about their being to the scientists, not as they are scientists but as they are human beings—indeed, as he says, an unaccustomed way of talking to scientists. There is a twofold meaning of " is " and, correspondingly, there are two meanings of nature. The physicist understands nature as world, the order of the many in space and time. Aristotle conceives nature as " Physis," the structure of concreteness so far as the concrete is concrete; nature as Being; " Physis born together," as Plato said.

(Here, " Aristotle " without explicitly referring to it, reveals one of the roots of modern philosophy of existence, which, at least with Martin Heidegger, started with a shifting from Kantianism and Phenomenalism to Aristotelean ontology. It would make an interesting study to clarify the correlations obtaining between developments in modern physics and certain modern philosophies which apparently are of a quite different spirit and, nevertheless, express the same basic mentality. The lecturer, however, is not concerned with modern philosophy.)

In physics the world vanishes; it is replaced by abstraction. Being without a world is nothing, a world not revealing being is vain. " Aristotle " wants to find the way back into the " inward density of being." The road is the one of ontology. He tries, accordingly, to make his audience see the true significance and the implications of substance. This notion has disappeared from physics which rather deals with relations of relations only, and which, to reach an " objective " world has discarded also the relation to the observer, " retaining a πρὸς τί without a τί, a kind of being-to-others without others." The being of the observer himself, his " inner density of concreteness " is neglected. Any concreteness, accordingly, disappears; no substance is conceivable any longer. " Objective being is the being of subjects as substances, not of objects that are not related to subjects." Motion too is incomprehensible without substance and without potentiality and actuality being taken into consideration. Tendencies, impulses, vectors, etc., are words to mask what Aristotle spoke of as potency.

Aristotle's intention, when studying motion, was to discover terms which apply both to the reality behind physics and to human life. These terms may be vague, lacking definiteness; but the terms of physics are clear and distinct only as long as one remains within a mere number space. They are accurate only in an empty world. The world of physics and the reality wherein man lives are separated by an abyss.

" Aristotle's " ideas as developed in these lectures hinge on the conception that reality has " both an outward breadth and an inward density." Only

when taken together can they reveal reality. What physics talks of is not the cosmos; it is a " message of the cosmos." As long as physics is considered as the true and the only approach to reality, reality will elude man's attempts to get hold of it.

This is, of course, a fragmentary and very incomplete rendering of these lectures. One wonders how far these ideas mirror truly what the Philosopher would have thought had he known modern science. No doubt the criticisms and the views he opposes to the modern conception are largely justified. No doubt also the modern scientist will not know what to do with a notion like " density of being "; you cannot measure it, therefore it has no meaning. But this is just the point of " Aristotle "; there is more meaning in reality than the statements of the physicist reveal, and this other meaning is even more meaningful, as it were, than the formulae of physics, however well demonstrated by experiment. " Aristotle " voices, as in fact all true philosophy must, the basic ideas of mankind, clarifying and purifying what commonsense dimly apprehends. Whether or not one agrees with Dr. Riezler in all points, there is nothing to lessen the value and importance of his work. If nothing else, the book is exceedingly provocative. It ought to be read carefully by anyone interested in philosophy of nature. If not too prejudiced either by a blind belief in the omnipotence of science or by an unrealized or only half-realized metaphysics, the scientist too may profit by its study. The Schoolman will find many ideas he is accustomed to cherish and to see ignored by the *moderni*. He will also discover some points with which he cannot but disagree. There is a note on the *analogia entis* as conceived by Aquinas which seems to imply some misinterpretation of this idea. But, the note is so brief that this reviewer is not quite sure that he understood the author's meaning. Whatever one may find objectionable in this work as a whole, it is interesting, provocative and definitely worth reading. If it receives the attention it deserves, it may start some fruitful discussion.

RUDOLF ALLERS

The Steps of Humility. By BERNARD, Abbot of Clairvaux. Translated, with Introduction and Notes, as a study of his Epistemology by George B. Burch. Cambridge, Mass.: Harvard University Press, 1940. Pp. xi + 287, with index. $3.00.

From the viewpoint of the reviewer this work naturally falls into three parts: the Latin text of Bernard's work, the translation, and the introduction and notes. The text is that of Dom Mabillon; the translation is the author's own. With neither can we have any quarrel; the translation is especially praiseworthy for it captures the spirit of the Latin original in a remarkable manner.

We cannot be as enthusiastic about the introduction and notes. The introduction especially is an ambitious piece of research on Bernard's spiritual doctrine. Practically all of the saint's works are quoted and there is an obvious attempt to present his thought objectively. But here, and especially in the notes, Mr. Burch betrays a lack of real appreciation for Bernard's thought which he interprets in terms of modern philosophy, in particular, Kantian philosophy.

Two examples will suffice. In the introduction (pp. 33-34), after exposing Bernard's thought on the various types of consideration, the author concludes: "There are, then, including the subdivisions, six kinds of consideration. These are identical with the six 'ways of knowing' of modern philosophy: dispensative consideration is 'pragmatism'; estimative consideration of visible things is 'empiricism'; estimative consideration of invisible things by opinion is 'scepticism'; that by faith is 'authoritarianism'; that by understanding is 'rationalism'; speculative consideration is 'mysticism.'"

The second example is more conclusive of the author's ignorance of Bernard's doctrine, as well as of the Catholic doctrine of the Trinity, which Bernard certainly held. In the notes (p. 250), the author says: "Ultimate reality, proximate reality, and appearance are absolutely one, because they are identical, being the same thing considered from different points of view. Yet they are absolutely three, because they are more different from each other than any other things whatever, all other divisions or distinctions being merely subdivisions within one of these, which are the most basic categories possible. Ultimate reality is ultimate, itself derived from nothing, all else derived from it. Proximate reality is derived from ultimate because it is an appearance of it. Appearance is derived from proximate reality because it is an appearance of it, yet not in quite the same way as proximate reality is derived from ultimate. Appearance is also appearance of, and so derived from, ultimate reality. Their relations, therefore, are those of the Christian Trinity." It would be amusing to quote more; but this is enough to show that Mr. Burch has not written a book on the epistemology of St. Bernard.

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BRIEF NOTICES

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The second volume of *Mediaeval Studies* contains the following papers: "The Teaching of the Canonists on Usury: IV. Punishment of Usurers, by T. P. McLaughlin; "The Treatise De Anima of Dominicus Gundissalinus," edited by J. T. Muckle, C.S.B.; "Ralph Niger—An Introduction to his Life and Works," by G. B. Flahiff, C.S.B.; "Origin and Significance of the Byzantine Iconoclastic Controversy," by G. B. Ladner; "The Canzone d'Amore of Cavalcanti According to the Commentary of Dino del Garbo," by Otto Bird; "The Franciscan *Ordo Missae* in the Thirteenth Century," by V. L. Kennedy, C.S.B.; "Albertus Magnus on Aristotle's Second Definition of the Soul," by William Gorman; "An English Pilgrim-Diary of the Year 990," by F. P. Magoun, Jr.; and "A Teachnical Construction in Old English," by L. K. Shook, C.S.B.

L'Hygiène mentale et l'Education. Premiere Congrès annual, 19-22 juin 1940. Ottawa: Les Editions du Levrier.

In the introductory paper Fr. Louis-Marie Régis, O.P., explains the significance of the meeting whose proceedings are included in this book. He points out that for the art of education a speculative knowledge of the child's nature, though of extreme importance, is in fact insufficient. As an art, education is dominated by the particular nature of the work to be done; the children with whom the teacher works are individual specimens of human nature and not merely imperfect adults. Such individualized knowledge can come only from the experimental sciences. Their data plus the truths of rational psychology are essential to the teacher.

The papers read at this first meeting were: "L'Enfant et la Criminologie," by Dr. Antonio Barbeau; "The Personality Development of the Secondary School Child," by Dr. E. C. Webster; "Hygiène Mentale et Education Sexuelle," Noel Mailloux, O.P.; "The Hygiene of Mental Work," by Dr. A. G. Bills; "La Pratique de l'Hygiène Mentale à l'Ecole," by Dr. A. Marcotte; "The Role of the Teacher in Character Education," by Dr. J. A. Long.

Reason. (University of California Publications in Philosophy, Vol. 21.) Berkeley, Calif.: University of California Press, 1939. Pp. 228.

For several years the University of California has published annually a volume of lectures given by scholars who discuss a certain topic from their respective viewpoints. The lectures of 1938 deal with a very actual topic—reason. Actual it is, because the right understanding and evaluation of reason is a basic issue in the whole life of mankind and particularly in a crisis. The lecturers, all from the staff of the University of California, envision their common topic under the headings: "The Appeal to Reason," by W. R. Dennes; "Artifacts of Reason," by J. Loewenberg; "Reason in Science," by V. F. Lenzen; "Definition," by St. C. Pepper; "Reason in History," by E. W. Strong; "Rationality and Irrationality," by P. Marhenke; "Reason as Custodian,' by D. S. Mackay; "Reason and Purpose," by G. P. Adams. Many of the authors start or end with statements taken from Hume or embodying Hume's conceptions. On the other hand, there are statements which, although couched in a different terminology, remind the reader of well-known concepts. Both Loewenberg and Lenzen, for example, operate with a notion very much like the one of the degrees of abstraction. Mackay emphasizes the difference of "logical rigor" in science and in philosophy, not because metaphysics is devoid of such rigor, but because its "rigor" is of another kind from that of science. Adams affirms that there is, with man, "a new dimension added to the old principles of organization," the name of this new dimension being "reflection." The lectures of the present volume may appear unsatisfactory and disconcerting to those who incline more toward the Scholastic viewpoint, and will be criticized by others for not being "scientific" enough and too unwilling to make far-reaching concessions to positivism. In any case, they are stimulating, interesting, informative. And, most of all, they are a testimony to the aliveness of philosophical passion in an age very much in need of such an attitude and its achievements.

Scholasticism and Politics. By Jacques Maritain. New York: Macmillan, 1940. Pp. viii + 248. $2.50.

Readers will be interested in this latest exposition of M. Maritain's thought on political problems, originally presented as a series of lectures at Chicago University. The fundamental theme is the defense of man's humanity against the inhumanity rampant in the world today. In the first chapter the author summarizes his thought on integral humanism. This is followed by discussions of the dignity of the human person, its peculiar characteristics, and the failure of materialistic systems, inspired by Freud, to preserve human dignity. There is a further defense of the author's widely-known distinction between person and individual.

Joannis Dominici Lucula Noctis. By Edmund Hunt. (Publications in Mediaeval Studies, IV: The University of Notre Dame.) Notre Dame, Indiana, 1940. Pp. xxxi + 432.

Giovanni da Saminato, a monk in the Camaldolese Monastery of St. Mary of the Angels wrote to Coluccio Salutati, the outstanding defender of humanistic studies, a letter warning him of the folly of the classics. Salutati replied; the monk, feeling incapable of answering, sent the reply to Joannes Dominici at the Dominican Monastery of Santa Maria Novella. Dominici's answer is the *Lucula Noctis*, here edited by Edmund Hunt. This edition is based on the recently discovered manuscript in the University of Chicago Library, which is the very one read by Salutati himself. The *Lucula Noctis* is an interesting document in the history of Christian education. In the first twelve chapters Dominici presents a very strong case for the humanists. The remaining thirty-five chapters are a refutation of these arguments.

Theologia Fundamentalis. By H. C. Cotter, S.J. Weston, Mass.: 1940. Pp. 739, with index. $3.50.

This work follows to a great extent the traditional lines of treatises on Apologetics. The form is possibly more rigidly scholastic than usual, but the Latin is simple and readable. The section on Scripture is rather extended—intentionally, says the author, since Scripture is the soul of theology.

The Doctrine of the Trinity. By Felix Klein. Translated by D. J. Sullivan, M.A. New York: Kenedy, 1940. Pp. 293. $2.50.

By an excellent combination of positive and scholastic theology, Abbé Klein presents as clear a picture of the mystery of the Trinity as one would wish. The profundity of the mystery is not lost, but simplicity of language puts the book within the grasp of all.

The Spiritual Life according to St. Isidore of Seville. By Sister Patrick Jerome Mullins, O.P. (The Catholic University of America Studies in Medieval and Renaissance Latin Language and Literature, Vol. XIII.) Washington, D. C.: Catholic University Press, 1940. Pp. xi + 212, with index. $2.00.

In the first two chapters the author considers the life and character of St. Isidore and the sources of his doctrine. The doctrine is then exposed in three chapters, entitled: The Foundation of the Spiritual Life; The Way of Perfection; The Ideal of Perfection. A select bibliography is appended.

BOOKS RECEIVED

Allie, Jean-Leon. *L'Argument de Prescription dans le Droit Roman, en Apologétique et en Théologie Dogmatique.* Ottawa: Les Editions de l'Universite d'Ottawa, 1940. Pp. 220, with index.

Bryan, W. L. *Wars of Families of Minds.* New Haven: Yale University Press, 1940. Pp. xv + 143, with index. $2.00.

Efron, A. *The Sacred Tree Script: The Esoteric Foundation of Plato's Wisdom.* New Haven: Tuttle, Morehouse and Taylor Co., 1941. Pp. xxiv + 372.

Garlan, E. N. *Legal Realism and Justice.* New York: Columbia University Press, 1941. Pp. xii + 161, with index. $2.00.

Healy, Sr. Emma Thérèse. *Saint Bonaventure's "De Reductione Artium ad Theologiam."* St. Bonaventure, N. Y.: 1939. Pp. 212.

Kieda, Francis, C. R. *De Matrimonii Celebratione Per Procuratorem.* Rome: Typis Pontificiae Universitatis Gregorianae, 1939. Pp. xii + 104, with index. $1.25. (Procurable through author, Box. 4468, Brookland, D. C.)

Leen, James, C.S.Sp. *By Jacob's Well: A Planned Retreat.* Trans. by Edward Leen, C.S.Sp. New York: Kenedy, 1940. Pp. 419. $3.50.

Mackey, J. H. *A Preface to Christian Theology.* New York: Macmillan, 1941. Pp. x + 187, with index. $2.00.

O'Connell, D. M. *Kindly Light.* (A Second Cardinal Newman Prayer Book.) New York: America Press, 1941. Pp. 346, with indices. $2.50.

Rall, H. F. *Christianity: An Inquiry into its Nature and Truth.* New York: Scribner's, 1940. Pp. xvi + 363, with indices. $2.50.

Russell, Bertrand. *An Inquiry into Meaning and Truth.* New York: Norton, 1940. Pp. 445, with index. $3.75.

Schroll, Sr. M. Alfred. *Benedictine Monasticism as Reflected in the Warnefrid-Hildemar Commentaries on the Rule.* New York: Columbia University Press, 1941. Pp. 217, with index. $2.75.

Science, Philosophy and Religion: A Symposium. New York: Conference on Science, Philosophy and Religion, 1941. Pp. 443. $1.50.

Vann, Gerald, O.P. *Saint Thomas Aquinas.* London: J. M. Dent & Sons, 1940. Pp. ix + 182. 6 s.